Confidential

Chapter IV

★

METEOROLOGY AND CLIMATOLOGY OF BULGARIA

(JANIS No. 38)

★

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Chapter IV

CLIMATE AND METEOROLOGY

40. General Description

A. Climatic seasons.

Bulgaria, for the most part, experiences a continental type of climate, with warm summers and fairly cold winters. Such conditions are most pronounced in northern Bulgaria and in portions of the northwestern section of the country. At altitudes above 3,000 feet, cool summers and perceptibly colder winters prevail, while in the southeastern section of the country Mediterranean type weather prevails, with warm, dry summers and cool, wet winters. The Black Sea coast of Bulgaria has a somewhat milder climate than the interior.

Bulgaria is mainly under the influence of westerly winds, which transport air from the interior to the Black Sea. In winter, the characteristic wind direction varies between SW and NW, with the result that the northern plain especially is exposed to severe cold waves from the interior of Europe. In summer, easterly wind directions are preponderant from the coastal zone far toward the interior, while in the interior proper, calms are observed with predominating frequency.

The mean January temperatures in the interior of northern Bulgaria range from 28° to 30° F.; in the coastal zone of the Black Sea they vary between 34° and 36° F. The southern parts of the country also show above-freezing winter temperatures (33° to 35° F.). The July temperatures range from 68° to 73° F.; in the extreme south of the country they exceed 75° F.

Mean cloudiness for the year averages about 5.4 tenths. December brings maximum cloudiness with an average of 7.0, August minimum cloudiness averaging 3.0.

Precipitation averages about 25 inches for the year, but varies greatly with exposure; in the lowland it is 20 to 28 inches and at the higher stations in the Stara-Planina (Balkan Mountains)* and Rodopi Planina (Rhodope Mountains) it is as much as 39 inches and more. In the north, precipitation falls on 100 to 130 days annually, while in the south on less than 100 days. In the southeast, where the Mediterranean climate prevails, the number is less than 75. Maximum frequency of precipitation occurs in May and June, and minimum frequency in August and September. This holds true for all of Bulgaria, except in the extreme southeast where the typical Mediterranean march of annual rain frequently prevails with maximum frequency in October and January and minimum in July to September.

The annual number of days with fog varies from ten in the southern part of Bulgaria to 50 in the central western and northeastern parts of the country.

(1) Winter season (December, January, February). During the winter season an area of very high pressure is centered over Siberia with extensions over the Balkan peninsula, while an area of low pressure is over the Mediterranean. This difference reaches maximum development in January (Table IV - 4)*. As a result of this distribution, there is a general tendency in Bulgaria for cold, north winds to blow during winter (Figure IV - 1 and Table IV - 17). However, the full effect of the pressure difference is modified in some parts of the country by mountain ranges and in other parts by a series of cyclonic depressions. These depressions move eastward through central Bulgaria and frequently cause southerly winds to blow over the country. Bulgaria is mainly under the influence of westerly winds, which transport air from the interior to the Black Sea. In winter, the characteristic wind direction varies between SW and NW. Velocities are greatest in winter months but do not attain any great strength. Gales are most frequent in winter but only in the mountain regions do they average more than one per month.

In regions which are exposed to the northerly winds, winter temperatures are rather low (Figure IV - 2). In the Rodopi Planina, Chepelare, at an elevation of 3,625 feet, has an average winter mean of 29.1° F. At Samokov (3,117 feet), about 30 miles southeast of Sofiya (Sofia), and Rilski Mnastir (Monastir) (3,855 feet), 40 miles south of the capital, winter temperature averages are similar. To the southwest, in the basins of Sofiya and Kyustendil (Kustendil), the average winter mean temperatures are somewhat higher. Also, in part of the latter some of the lowest temperatures in Bulgaria have been recorded. An absolute minimum of −24° F. has been observed at Sofiya, while in the Rodopi region temperatures have been −12° to −20° F. (Tables IV - 5 to IV - 8).

In the Central Depression, to the south of the Stara-Planina, winter conditions are much less severe, owing to the lower elevation and to the protection afforded against cold northerly winds by the Stara-Planina. Mean January temperatures at Stara-Zagora (768 feet) and at Khaskovo (Haskovo) are 33° and 31° respectively.

In the Stara-Planina, temperatures vary with elevation and are also considerably affected by local conditions. Gabrovo, on the northern slope (1,230 feet), has a January mean of 30° F. and a July mean of 68.4° F.; Kazanlk (Kazanlik), on the southern slope (1,312 feet), has a January mean of 33° F. and a July mean of 71° F.

On the Danubian Tablelands (Balkan Foreland), northwest of the Stara-Planina, conditions are more inclement than in the Central Depression, south of the Stara-Planina. The January mean is lower, for Lom (131 feet) on the Danube and Pleven (344 feet) on the Danubian Tablelands it is 29° F.

Varna and Burgaz (Burgas) on the Black Sea coast have a somewhat milder winter climate than places further inland, but it is probable that they owe this to their sheltered positions rather than to the proximity of the sea.

Precipitation in Bulgaria is distributed fairly evenly throughout the year. Most rain falls during the summer months but considerable amounts fall in winter (Figures IV - 3 to IV - 5 and Tables IV - 9 to IV - 11). Rainfall over the whole

*The following spellings of features as used in this Chapter differ slightly from those on G.S., G.S. maps, Series 4072 and 4088: Bebrezh, Bozhurishte, Canara (Kana-Gol), Carasuum, Cherni Iskr, Chiporovtsi, Devna, Dobrich (Bazargic), Dobrinishta, Dubovo, Ellidere, Emine (town), Ghiaur Suiuciuc (Chiar Suiuciuc), Gorna Dzhumaya, Gorna Orekhovitsa (Gln.-Orekhovitsa), Gulubovo (Gara-Glebovo), Kazanlk, Kharmanli, Koprivshtitsa, Kuri Burnu, Ladzhene (Lzhene), Musala, Panagyurishte, Paphia (Mt.), Peinirdzhik, Perushtitsa, Peshtera, Piraiévs, Pirdop (Pirdol), Polikraishte, Rakovets, Resen (Pesen), Sofiya, Sredets, Stizharov, Surnena Gora (Srneha Gora), Svishtov, Syuyutliika, and Trgovishte.

*Figures IV- 33 to IV- 45 and Tables IV- 4 to IV- 23 are at the end of the Chapter.

country is rather light during autumn, but in November it begins to increase as a result of the passage of eastward-moving depressions, and a secondary maximum manifests itself either in that or the following month. In the southeastern portion of the country, which is exposed to winds from the Aegean Sea, maximum rainfall occurs in winter (in December at Malko Trnovo (Malko-Tirnovo)). Over the whole country the average annual precipitation is between 20 and 30 inches. In the Rodopi region it is between 25 and 30 inches, in the Central Depression between 20 and 25, and in the basins of Sofiya and Kyustendil about 25 inches. Slightly higher values are recorded at some of the higher mountain stations.

Thunderstorms occur on an average less than once per month during the winter season (Table IV - 15).

Snowfall is heaviest in the Rodopi region, in the Stara-Planina and in the southwest around Sofiya and Kyustendil (Figures IV - 6 and IV - 7). In the Central Depression the number of days on which it falls is much less, while along the nearby Aegean coast it is of comparatively rare occurrence. At Samokov there are 48 days per year with snowfall and snow cover on 83 days. While at Kyustendil light snow falls on about 18 days a year, the snow melts quickly and there are only 39 days with a snow cover. At Pleven there are 24 days with snow and an annual average of 45 days with a snow cover (see Tables IV - 13 and IV - 14).

The annual mean cloudiness amounts to 5.4 tenths. December has maximum cloudiness with an average of 7.0 (Figure IV - 8 and Tables IV - 18 to IV - 20).

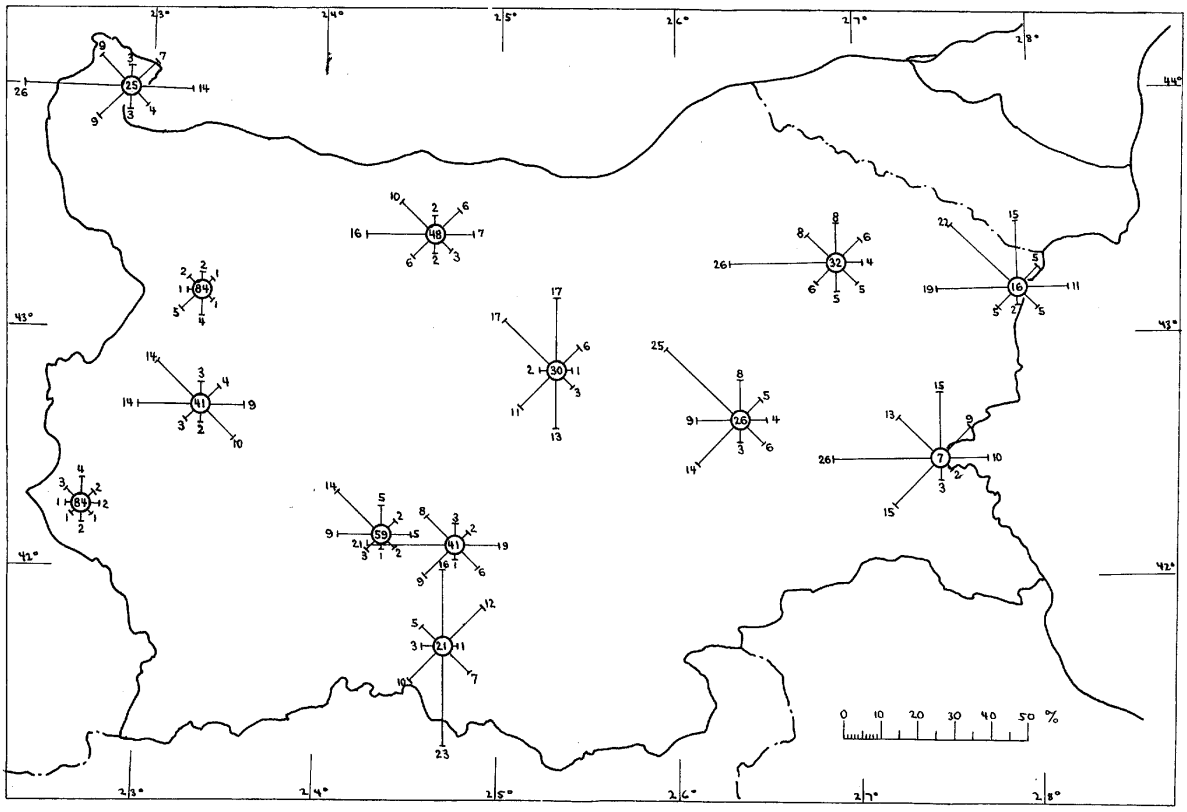
Visibility is limited occasionally in winter by fog (Tables IV - 20 to IV - 22). Over the interior, radiation fog* is the chief type. Most stations have a winter frequency of four to seven days a month (Figure IV - 9); the December maximum at Sofiya is 12 days, at Pleven it is nine days and at Plovdiv it is six days. The number of days with fog decreases from north to south. Usually fog forms in the early morning hours but visibility is good again by afternoon. Along the Black Sea coast and over the sea, poor visibilities are usually associated with the intervals between depressions or in the early stages of their approach or development.

(2) *Spring season* (*March, April, May*). Towards the end of March the winter pressure differences begin to decrease; April, May and early June are transition months when the average pressure gradient is slight.

Winds are rather variable during the spring, but west and northwest winds continue to prevail in the north and northwest portions of Bulgaria (Figure IV - 10). Along the Black Sea coast easterly winds dominate the northerly, and in the south the most prevalent winds are southerly.

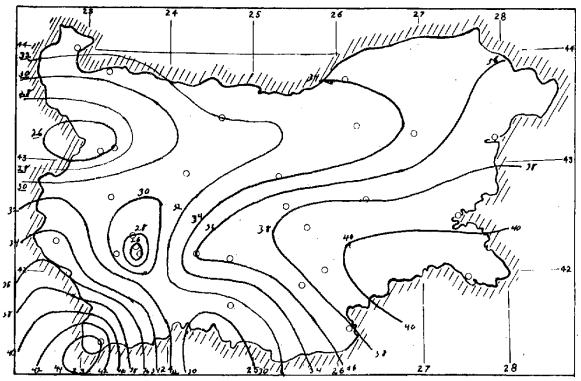
*Fog characteristically resulting from the radiational cooling of air near the surface of the ground on calm, clear nights.

FIGURE IV - 1



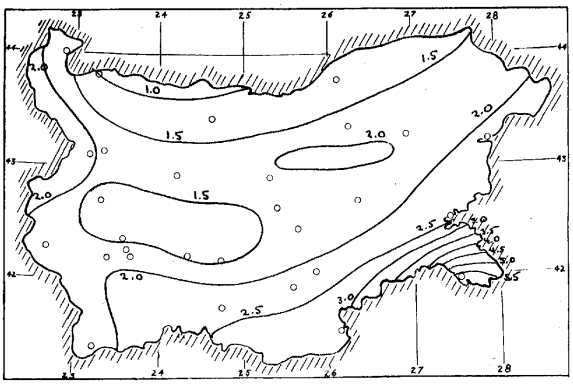
Winter wind roses.

FIGURE IV - 2



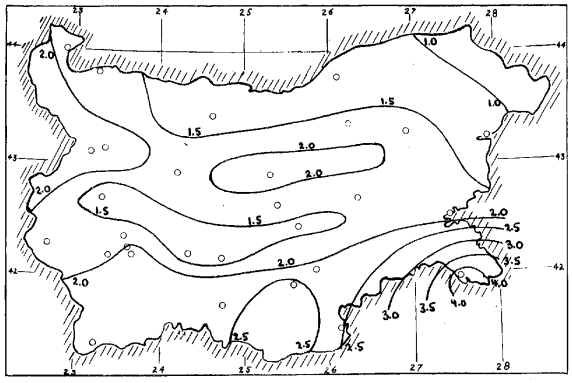
Winter isotherms (°F.).

FIGURE IV - 3



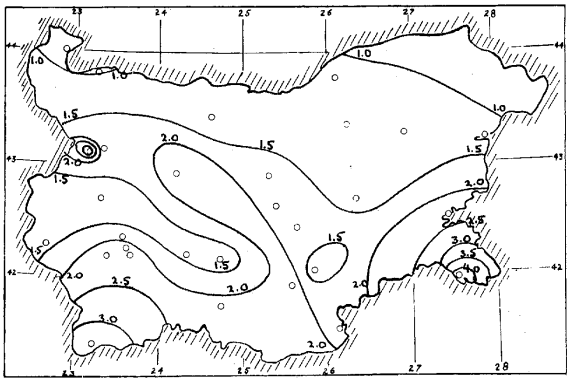
December rainfall (inches).

FIGURE IV - 4



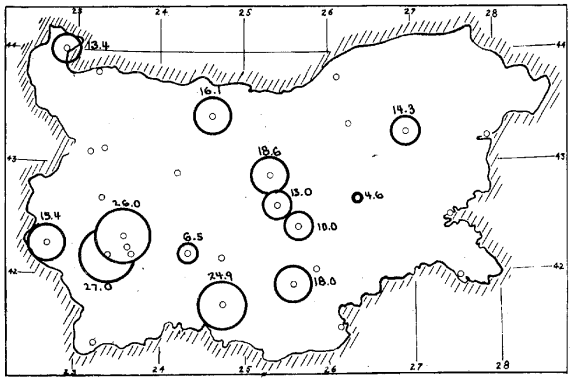
January rainfall (inches).

FIGURE IV - 5



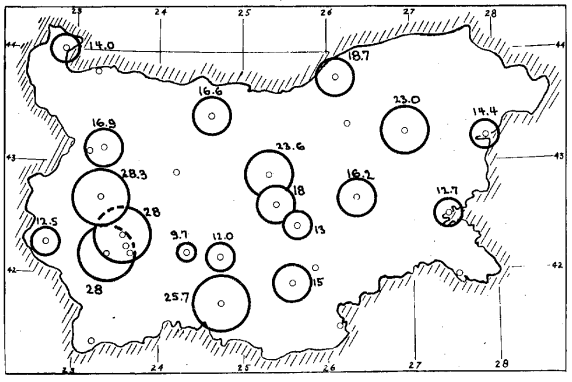
February rainfall (inches).

FIGURE IV - 6



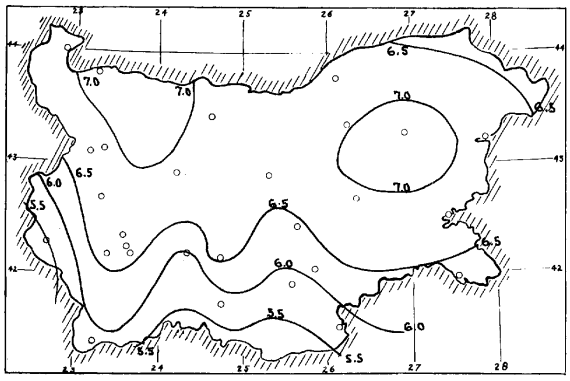
Number of days with snow covering ground in January.

FIGURE IV - 7



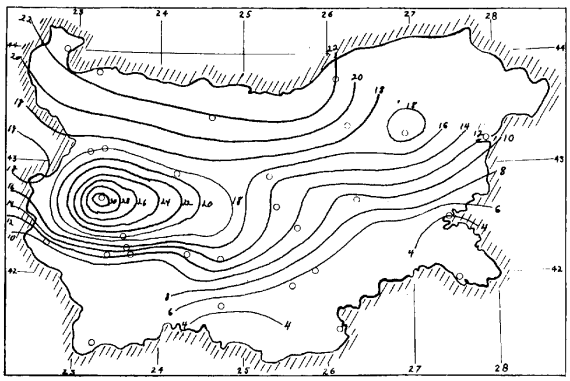
Number of days with snowfall in winter.

FIGURE IV - 8



Winter cloudiness (tenths).

FIGURE IV - 9



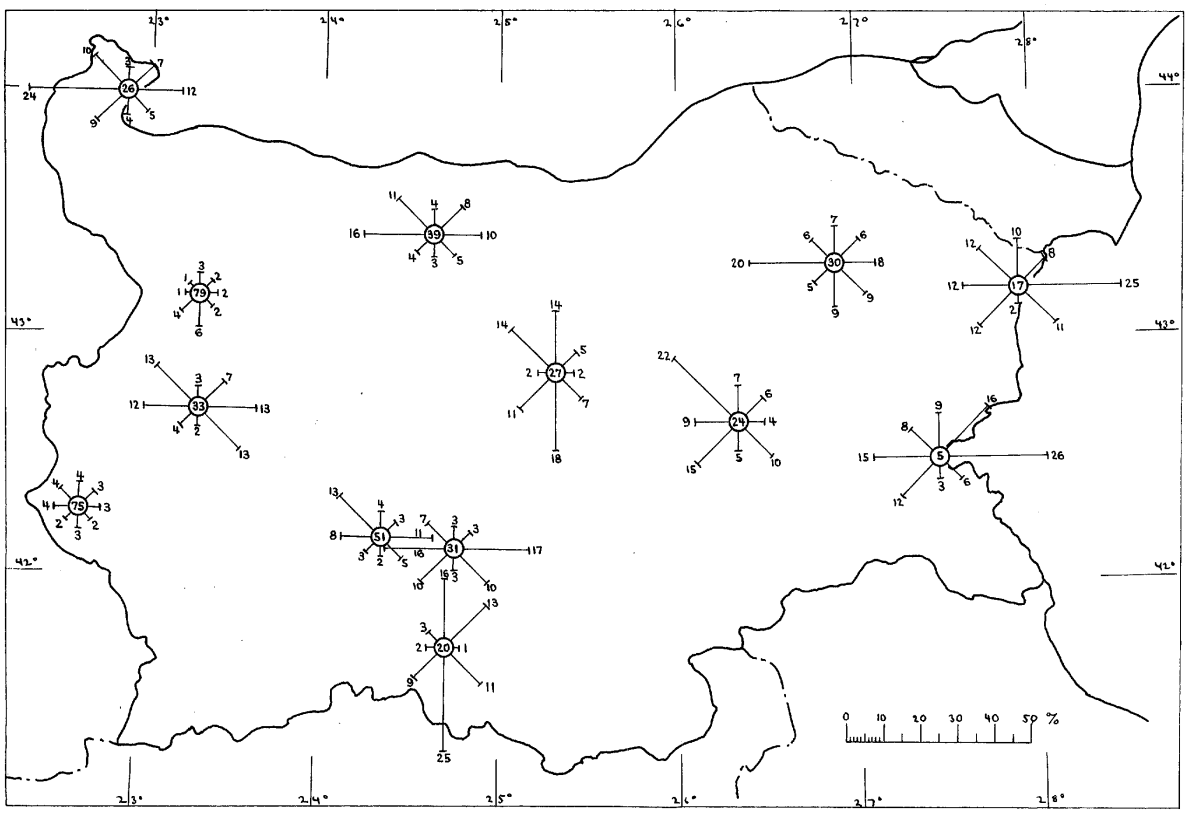
Days with fog in winter.

Temperatures rise rapidly throughout the country in spring. Mean monthly temperatures increase eight to ten degrees over the preceding month (Figure IV - 11). The mean minima for all except the highest mountain stations are above freezing by the end of March. Lowest temperatures have occasionally been below 32° F. as late as May.

Everywhere, during this season (except in the extreme southeast), the amount of rainfall increases toward the summer maximum (Figures IV - 12, - 13 and - 14). At Sofiya and Kyustendil the maximum fall is in May. However, along the nearby Aegean coast the number of days when rainfall occurs is less in spring than in winter.

Days with thunderstorms average less than one during March but the number increases rapidly to three to six, being

FIGURE IV - 10



Spring wind roses.

observed at most stations in May. Also, the number of days with hail is greater, reaching the maximum number per year in May (Table IV - 16).

Snow is observed on three to six days in March but only traces are recorded in May at a few of the highest stations (Figure IV - 15).

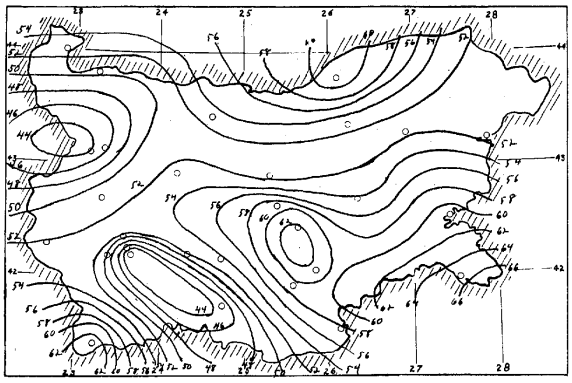
Cloudiness decreases from 7 tenths to 4 to 5 tenths in northern Bulgaria but does not change much elsewhere. Average spring cloudiness is between 5 and 6 tenths throughout the country (Figure IV - 16).

Fog is considerably less frequent in spring than in winter. Shumen (Schowmen) has an average of ten days with fog, while many other Bulgarian stations have reported two to four days with fog (Figure IV - 17).

(3) ***Summer season (June, July, August).*** As mentioned above, the pressure is weakening in June, and by July the general pressure gradient has reversed its winter direction; pressure is high to westward and low to eastward. The area of lowest pressure lies to the southeast over the Persian Gulf and northwest India, resulting in a flow of air from the northwest over the eastern Mediterranean. In this way the temperatures of south-central Europe are carried over the greater part of Bulgaria.

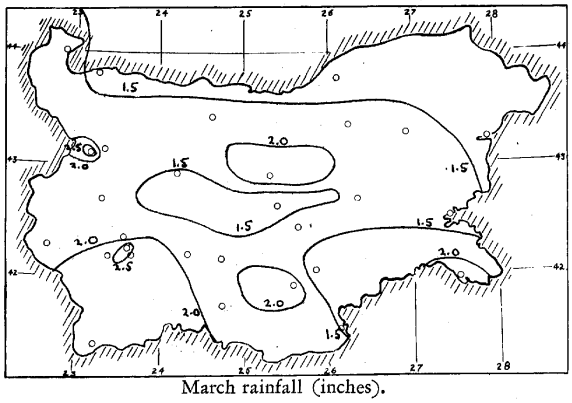
Winds are quite variable in summer but westerly winds are dominant over most of the central plain. Easterly winds prevail along the Black Sea coast (Figure IV - 18). Velocities are generally low, calms are observed quite frequently and gales are rare.

FIGURE IV - 11



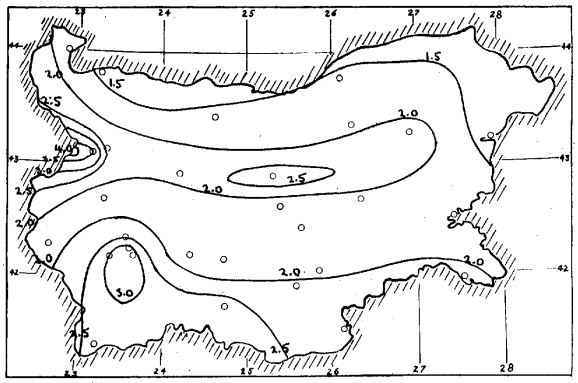
Spring isotherms (°F.).

FIGURE IV - 12



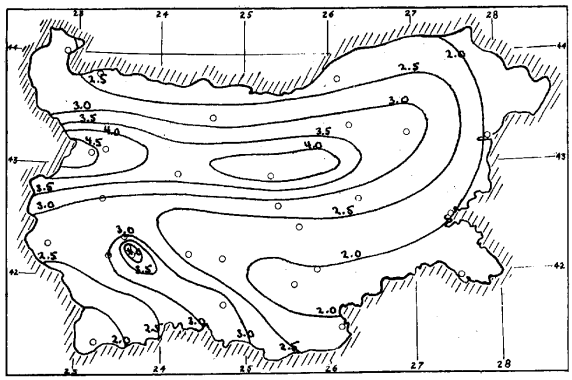
March rainfall (inches).

FIGURE IV - 13



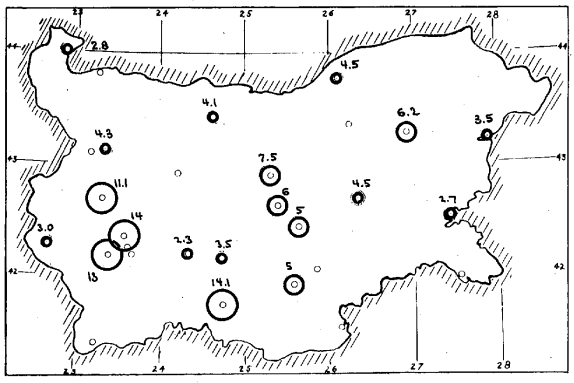
April rainfall (inches).

FIGURE IV - 14



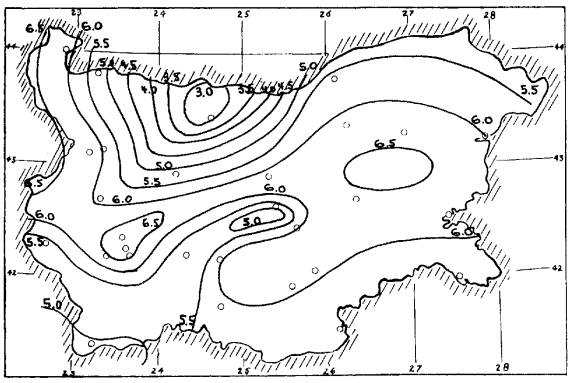
May rainfall (inches).

FIGURE IV - 15



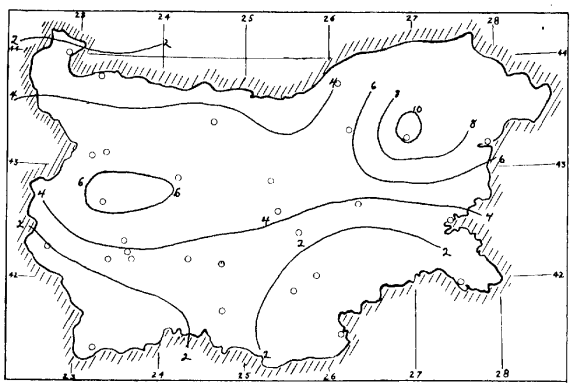
Number of days with snowfall in spring.

FIGURE IV - 16



Spring cloudiness (tenths).

FIGURE IV - 17



Number of days with fog in spring.

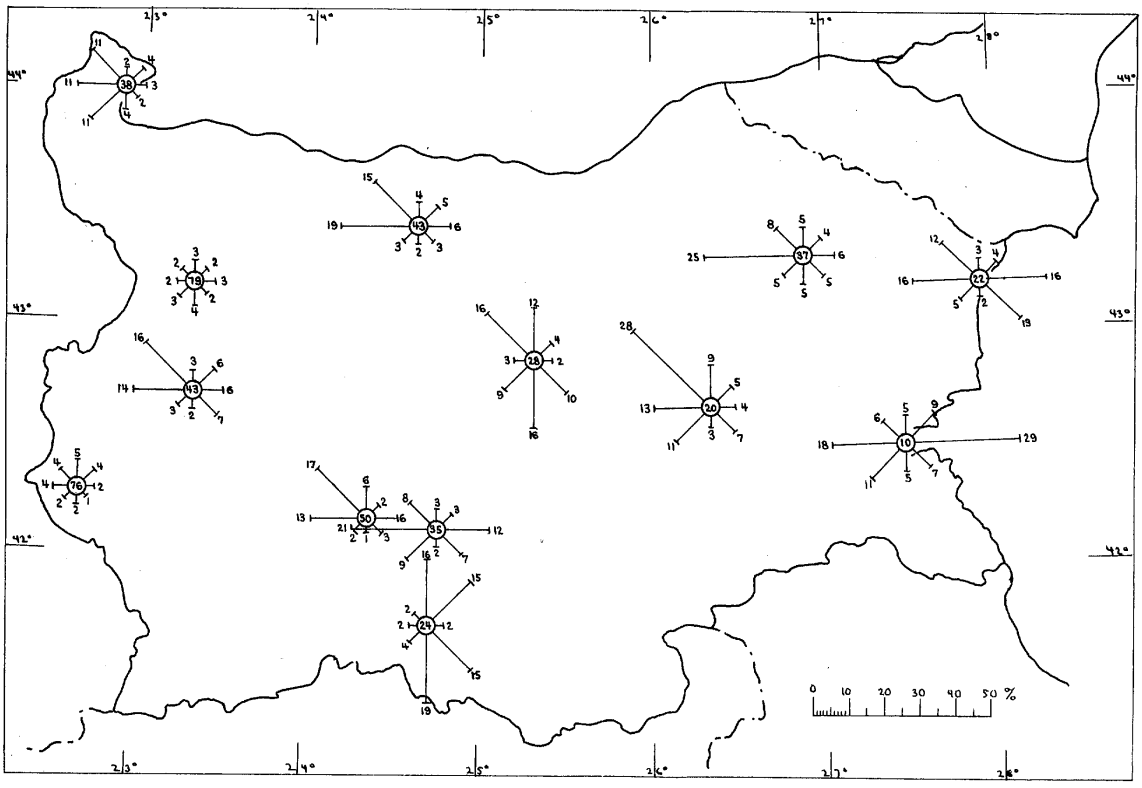
Maximum temperatures occur in July. These generally range from 68° to 73° F.; in the extreme south of the country they exceed 75° F. High mountain stations have cooler summers than elsewhere. In southwest Bulgaria, at Sofiya and Kyustendil, the mean July temperatures are somewhat higher than in spring (Figure IV - 19).

In the Rodopi Planina the highest temperatures on record are between 90° and 96° F.

In the Central Depression and in the Danubian Tablelands, mean July temperatures of 72° to 75° F. are higher than found anywhere else except along the nearby Aegean coast. Maxima of over 100° F. are frequent in August.

Annual precipitation in Bulgaria is evenly distributed throughout the year. In the Danubian Tablelands, in the Rodopi Planina and in the Central Depression, the heaviest

FIGURE IV - 18



Summer wind roses.

rainfall is in June. Along the nearby Aegean coast the summer is extremely dry (Figures IV - 20 to IV- 22).

Thunderstorms are common in Bulgaria during the summer months, especially in the mountains. Maximum frequency occurs in June; Sofiya and Kazanlk each have an average of 11 days with thunderstorms, while the rest of the country averages six to eight days. The number decreases during July and is three to four days with thunderstorms in August.

Less than one day of hail is recorded at most stations in June, and becomes even less frequent in July and August.

Cloudiness is low, there being less than 5 tenths cloud cover at all Bulgarian stations except at a few of the highest stations (Figure IV - 23). July and August each have from 10 to 12 clear days.

Shumen (Schowmen) and Varna are the only stations where fog on more than one day during any of the summer months has been reported (Figure IV - 24).

(4) *Autumn season (September, October, November).* The summer pressure gradient is maintained during September. In October, the winter distribution develops rather rapidly and by November is well established.

Few available records indicate a predominance of any wind direction in this season (Figure IV - 25). The transition to winter conditions in October and November is accompanied by stronger westerly winds. Calms are frequent throughout the country. Wind velocities are slightly higher than in summer but remain low except during infrequent gales.

Mean temperatures gradually decrease through the season. Mean minimum temperatures remain above freezing throughout the period but the extreme minimum may be below 32° F. after the middle of September (Figure IV - 26).

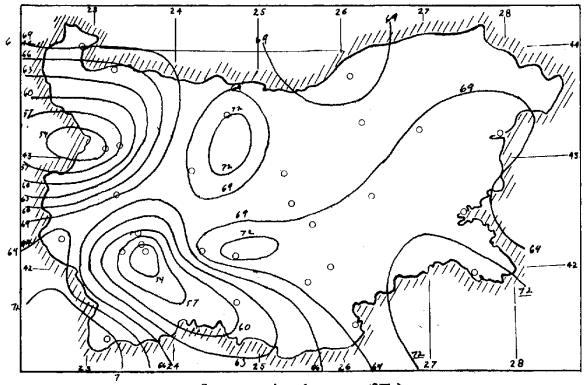
During September and October rainfall is generally low in Bulgaria. However, in November it increases as a result of the passage of eastward-moving depressions, and a secondary maximum occurs in November or December (Figures IV - 27, - 28 and - 29).

Traces of snow are occasionally observed in September and October. Not until November do monthly reports show more than one day with snow (Figure IV - 30).

Cloudiness is 6 to 7 tenths in November, but the average winter cloud cover is slightly over 5 tenths (Figure IV - 31).

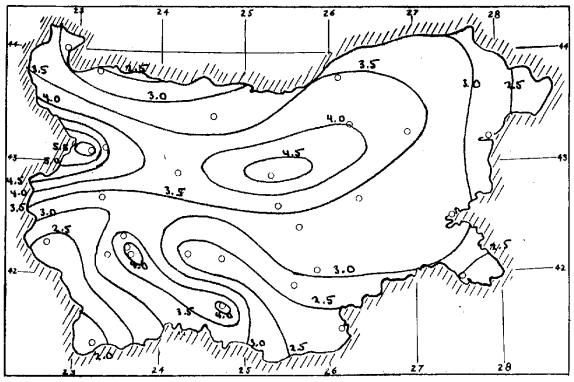
There is considerable increase in the number of days with fog toward the end of autumn. Sofiya, with ten days with fog reported in November, and Shumen have the greatest frequency (Figure IV - 32).

FIGURE IV - 19



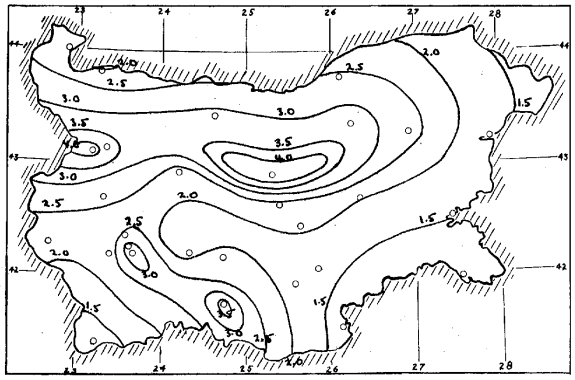
Summer isotherms (°F.).

FIGURE IV - 20



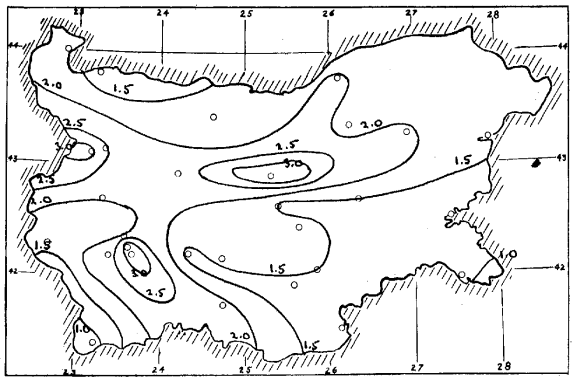
June rainfall (inches).

FIGURE IV - 21



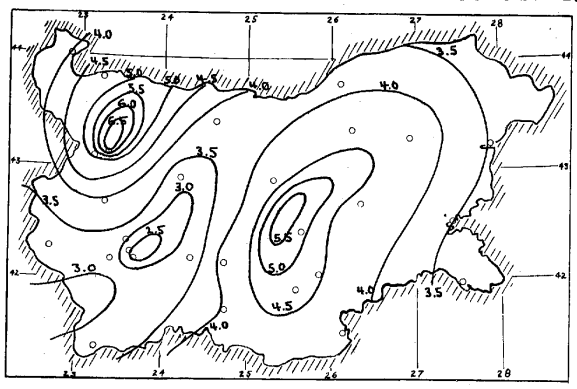
July rainfall (inches).

FIGURE IV - 22



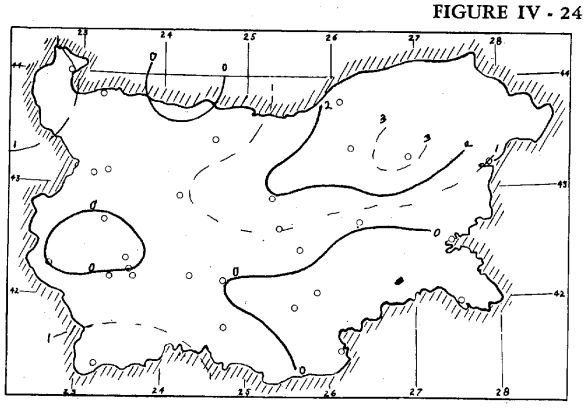
August rainfall (inches).

FIGURE IV - 23



Summer cloudiness (tenths).

FIGURE IV - 24



Number of days with fog in summer.

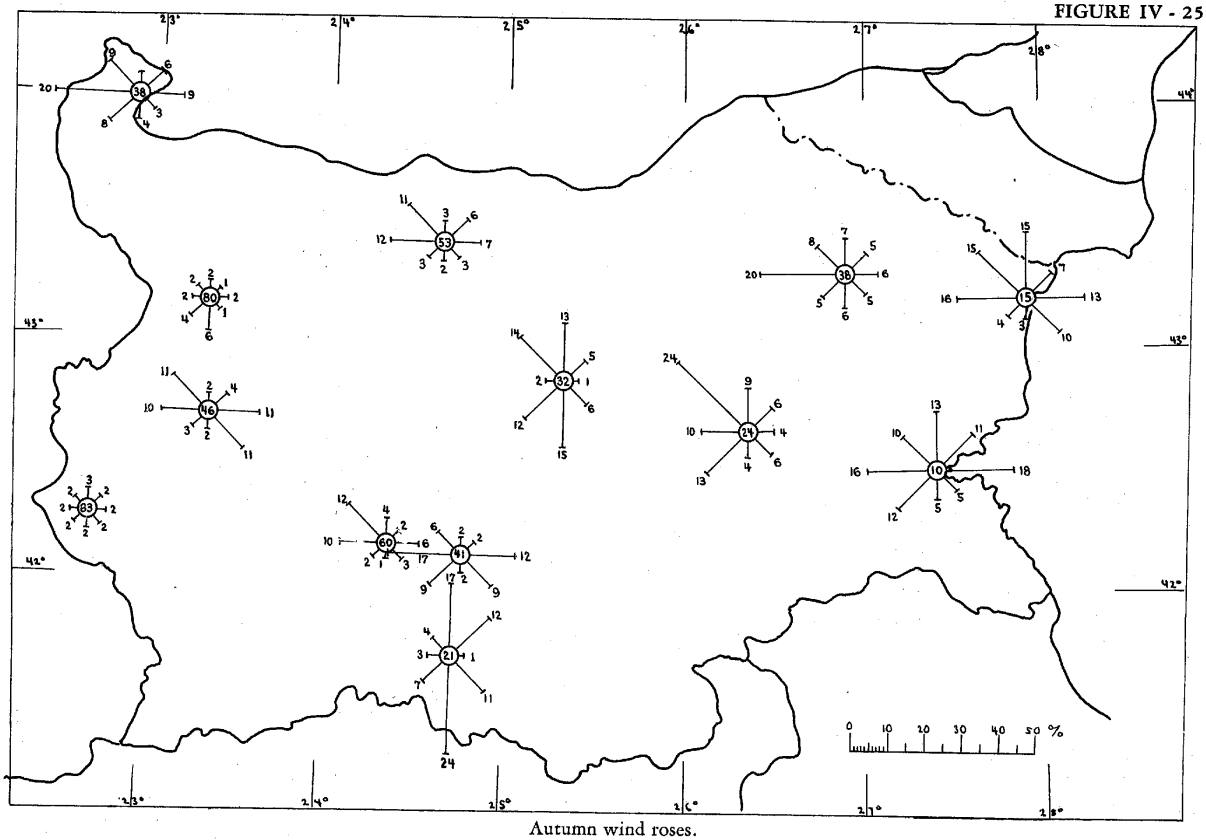
41. *Effect of Climate on Operations*

A. Landing operations.

(*1*) *Wind.* Throughout Bulgaria, most stations show a westerly component in their winds, but the influence of the Black Sea is shown in the wind roses for Varna and Burgaz (Figures IV - 1, IV - 10, IV - 18, and IV - 25). At those points westerly winds are dominant during winter, but become easterly during spring, summer and most of autumn.

The weather of the Black Sea is under the influence of a low pressure area, chiefly from October to April, when depressions are active in the Mediterranean Sea (Table IV - 4). Many arrive by way of the Sea of Marmara, others move in from the northern Adriatic over northern Bulgaria. These depressions are preceded by warm southeasterly or south winds, which may sometimes reach gale force; however, these gales do not last long. Such winds are dangerous on the coast and are the chief cause of havoc. If a south or southeast wind

FIGURE IV - 25



Autumn wind roses.

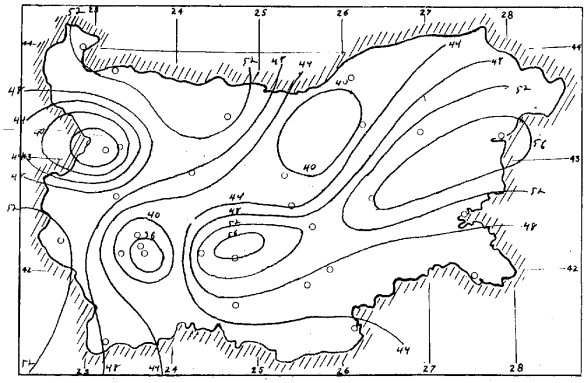
is blowing it produces the so-called "hacking" waves. In the rear of the winter-season depressions strong, cold northerly winds set in; strong north or northeast winds are likely to blow for two or three days and may reach gale force. Northerly gales are more likely to be heavy and lasting in mid-winter than in autumn or spring. Gales are recorded on the coast on two or three days a month between October and March. Depressions are much less frequent in summer; when they do occur they do not as a rule give rise to strong winds, but cause local thunderstorms accompanied by heavy rain showers and sometimes squalls of wind.

Varna and Burgaz are the only seaports. While landings can be made at other places, boats are exposed to the full sweep of the wind from three directions and the sea is usually very rough (see Chapter III, Topic No. 34).

At Varna prevailing winds are east in spring, north and northwest in winter, and west and east in the summer and autumn. They often come up suddenly and cause violent and dangerous storms. In addition, there is a steady local breeze, called "Iodos," blowing over the bay from the south. Calms are not unusual at all seasons of the year. (Table IV - 17.) Wind velocities average 2.9 miles per hour for the year. At Burgaz the prevailing winds are west in winter, and east the rest of the year with frequent north winds throughout the year (Table IV - 17). Velocities are strongest during the winter months and average 5.2 miles per hour for the year.

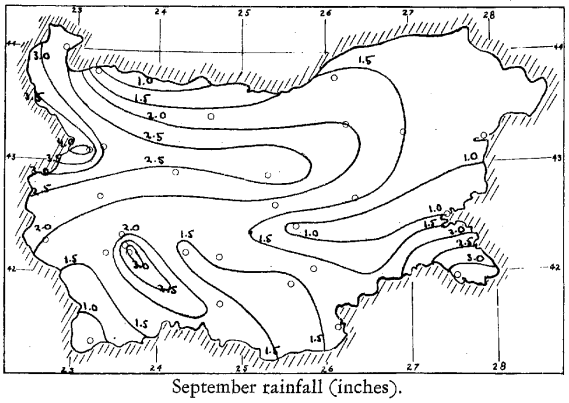
(2) ***Land and sea breezes.*** In summer, land and sea breezes are the prevailing winds near the shore. They begin in April

FIGURE IV - 26



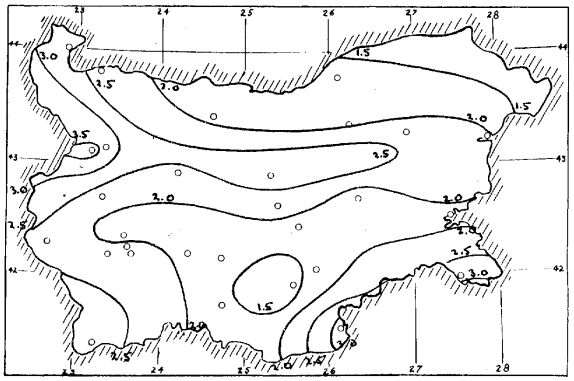
Autumn isotherms (°F.).

FIGURE IV - 27



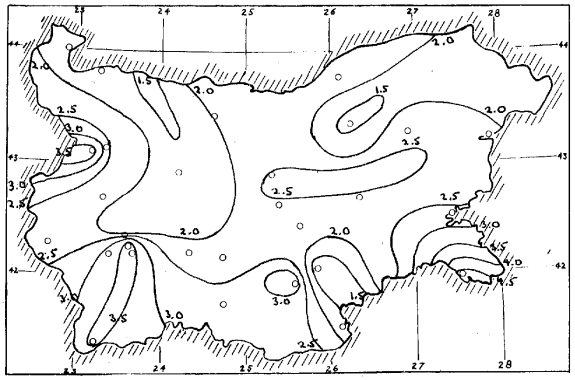
September rainfall (inches).

FIGURE IV - 28



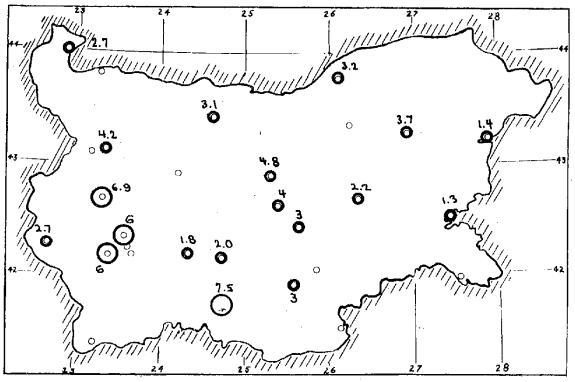
October rainfall (inches).

FIGURE IV - 29



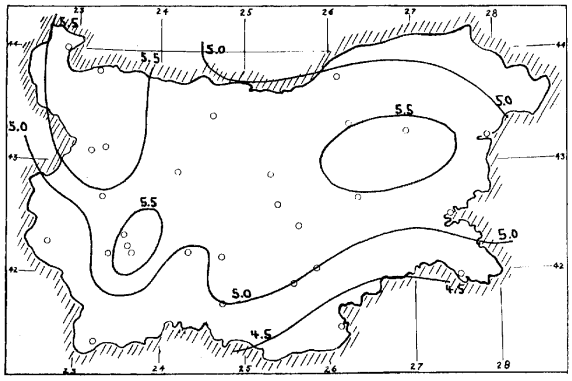
November rainfall (inches).

FIGURE IV - 30



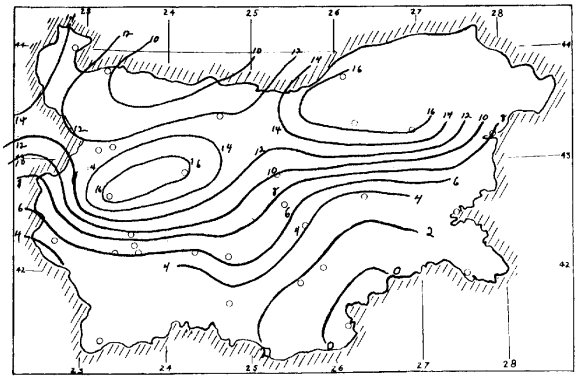
Number of days with snowfall in autumn.

FIGURE IV - 31



Annual cloudiness (tenths).

FIGURE IV - 32



Number of days with fog in autumn.

and last until October; during October they become irregular. At Burgaz, these winds are mainly easterly and westerly. In ordinary weather, a northwest breeze rises about midnight and freshens till daylight, veering through northeast to southeast, and then veers through southwest to northwest, where it dies away at sunset.

(3) ***Spells of light winds.*** Lightest winds are experienced along the coast during the summer months, especially from June to August. Varna experiences calms throughout the year; 16 per cent of the time in winter, 17 per cent in spring, 22 per cent in summer, and 15 per cent in autumn.

Winds are lighter at Burgaz than at Varna but calms are less frequent; 7 per cent of the time in winter, 5 per cent in spring, 10 per cent in summer, and 10 per cent in autumn.

Gales have developed on the coasts in summer but they are not likely to be experienced more than once a month. Thunderstorms are sometimes accompanied by sudden and violent squalls of wind.

(4) ***Sea and swell.*** Little data are available. At both Varna and Burgaz there are no tides and there is only a slight southerly current in the offing.

Swells are most likely to occur in the rear of passing depressions during winter. As the depressions pass, the strong northwest winds at the rear are likely to shift to northeast and are usually preceded by a swell from the northeast.

Sea conditions are favorable from May to September, with at least 50 per cent of the days having a calm or light sea. In other months, a calm or light sea is present on about 20 per cent of the days, with offshore winds prevailing along all coasts in winter.

(5) ***Visibility and mirage.*** On the coast, fog occurs most often from October to April, but there is a good deal of variation in the frequency of fog from one part of the coast to another and from one year to another.

At Burgaz, fog is recorded on about four days, and at Varna from three to four days a month, from November to March (Table IV - 21). Many of the mid-winter fogs are due to radiation and form at night in cold, calm weather or with light northeasterly winds; they may persist during the day.

In summer, fog is occasionally recorded on the coasts. It has been recorded at Varna about once a month between April and September.

Thick mist is reported to occur off the coast in winter with prolonged, light northeasterly winds.

B. Movement over the country.

(1) ***Precipitation***

(*a*) *Rainfall probability.* Rainfall is evenly distributed throughout the year with greatest amounts falling during the summer months. Throughout most of the country heaviest rainfall is in June. In the basins of Sofiya and Kyustendil the maximum occurs in May. During September and October, rainfall over the whole country is low. A secondary maximum results from the passage of eastward-moving lows either in November or December. Along the nearby Aegean coast, summer is extremely dry and the maximum rainfall occurs in winter.

Over the whole country, the average annual precipitation is between 20 and 30 inches. This affects the soils differently, depending on their composition. Burgaz and Varna have a somewhat similar precipitation distribution but the variations in the number of days with wet soil are a result of the difference in the soils at the two cities (Table IV - 1). At Sofiya, soils are heavy and clayey and during the winter and spring rains the roads and lands off the main highway are like gumbo mud. However, at Varna, the soils are drier, lighter in texture and are able to absorb moisture to a greater degree so that the ground is seldom flooded and the occasional mud is not as heavy or as adhesive as that at Sofiya.

TABLE IV - 1
SOFIYA AND VARNA, DAYS WITH WET SOIL,
5- TO 14-YEAR PERIOD

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Sofiya...	5.2	5.6	10.4	13.1	16.4	12.3	8.8	7.0	8.2	13.9	16.2	12.0	129.1
Varna...	0.7	0.6	0.8	0.6	1.1	1.8	0.9	0.7	1.1	2.1	1.5	1.1	13.0

In the Danubian Tablelands, the soils are also light in texture. Water does not tend to stand on the surface but runs down the slopes. Where tobacco is grown in the Central Depression, the soils are light with only a small quantity of organic matter and little inconvenience with mud would be encountered (see Chapter II).

(*b*) *Drought probability.* Usually, September and October are dry months in Bulgaria. However, over a long period of time, February has the least rain. During a 15- to 20-year

period, all available stations have reported at least one February with 0.0 to 0.2 inch of rain.

The driest area is the eastern part of the Central Depression, especially from August to early November.

(*c*) *Duration and depth of snow cover.* In the Stara-Planina, the amount of snowfall and the period during which the ground remains covered with snow is of great importance, since snow may cause even greater hindrance to transportation and communication than rain. In the Bulgarian highlands, snow falls frequently during the winter months, especially in December, January and February. Some of the heaviest falls take place in the rear of passing depressions when a northwesterly wind is blowing. On the average, snow falls on about one-third of the days in these months and the ground is covered with snow for more than two-thirds of the month (Figures IV - 6 and IV - 7 and Table IV - 13). In years when winter is more severe, these numbers are exceeded and snow may fall on half the days, while the ground may remain snow-covered for the whole three months of December, January and February (Table IV - 14). Chepelare and Sofiya each experience an average of 46 days of snowfall a year, and this falls to 17 to 19 days along the Black Sea coast. Figure IV - 7 also shows fewer winter days with snow in the southwestern portion of Bulgaria.

It has been reported that when snow falls and ice forms, any kind of transportation using the highways will be greatly handicapped as the main roads cross the mountains at an elevation of 3,000 feet or more. During the winter, heavy snows ordinarily block these roads for considerable periods of time. This makes the railroads of even greater importance in winter than in summer.

Also, the Kazanlk/Trnovo/Ruse highway, which crosses the mountains via Shipka Pass, becomes very difficult to cross during the period of heavy snow, usually from the fifteenth of December to the first of March.

The depth of snow in the lowlands generally does not exceed one to two feet.

(*d*) *Thunderstorms and hail.* As noted above, thunderstorms are most frequent in Bulgaria during the summer months, more especially in mountain regions where high temperatures, light winds and rapid condensation are all favorable to their development. They are less frequent in the lowlands, and only about half as many occur in the Central Depression as in the mountains (Table IV - 15). They are generally accompanied by heavy rain. The weather before each is hot and dry, and becomes much cooler after the storm has passed.

Maximum occurrence is in June and they slowly decrease in number until winter. The daily maximum period falls between 1200 and 1600, the minimum between 2400 and 0400.

The annual distribution of hail follows very closely that of thunderstorms. Maximum frequency occurs in May. Sofiya receives hail on about six days a year. This figure decreases to less than two days at Varna and is least in the southwest (Chepelare, .9 day). Like thunderstorms, more than twice as many days with hail are observed in the mountains than on the plains (Table IV - 16).

(2) *Temperature and humidity.* Relative humidity remains relatively high throughout the year. Highest mean humidities, 83 to 89 per cent, occur during the winter months. Lowest humidities, 50 to 55 per cent, are recorded in July or August (Table IV - 12).

(*a*) *Minima.* In the regions exposed to northerly winds, winter temperatures are rather low. Outside of the high mountain stations, lowest temperatures have been observed in the basins of Sofiya and Kyustendil. An absolute minimum of −24° F. has been observed at Sofiya. In addition, in the Rodopi region temperatures have been −12° to −20° F. (Table IV - 7).

(*b*) *Maxima.* Highest temperatures are found along the nearby Aegean coast. A maximum of over 100° F. is not infrequent in the month of August. The highest temperatures on record in the Rodopi Planina are between 90° and 96° F. In the Sofiya and Kyustendil basins slightly higher temperatures have occurred: Sofiya 99° F. and Kyustendil 101° F. (Table IV - 6).

(*c*) *Frost and thaw probability in critical months.* Frost occurs from November through April, and occasionally in May, September and October. First frost is most likely to occur after the 15th of October throughout most of the country, and in late September or early October in the higher places. First frost lasting all day occurs during November.

Thawing usually begins late in March or early April. The number of days with frost and days with frost all day are given in Table IV - 8.

1. Killing frost. The first killing frost is most likely to occur late in October or early in November.

2. Freezing of soil mantle. No definite information is available.

3. Freezing of water bodies. Small lakes and streams usually begin to freeze very late in November or early in December.

The Danube River is frozen over in about 72 winters out of 100; the ice lasts, on an average, for 39 days but has a range of up to 60 days. In normal years, the river is ice-bound between the end of December and the beginning of March, though in some years it remains ice-free. On the other hand, ice may hinder navigation as early as the last 10 days of November.

4. Thaws. As noted above, ice breaks up in the Danube at the beginning of March. Smaller rivers and lakes break up during March and snow melts from the plains in April and from the hills in June. A prolonged winter may cause these periods to overlap or even to coincide.

(3) *Barometric pressure.* During the winter months, the high pressure system which then is over the greater part of Eurasia extends into the Balkan peninsula, while a belt of low pressure occupies the basin of the Mediterranean. As a result of this pressure distribution, there is a general tendency in Bulgaria for cold north winds to blow during the winter. The full effect of this distribution is felt in January. In summer, on the other hand, pressure is reduced over the whole Balkan area, but a strongly marked area of low pressure develops over the Persian Gulf and northwest India.

Mean pressures for several stations are given in Table IV - 4. (The various Bulgarian weather service publications are not in agreement as to whether or not pressure readings are reduced to sea level; however, it is felt that the pressures given in Table IV - 4 are not reduced.)

(4) *Mirage.* Not applicable.

C. Aviation.

(1) *Airfield surfaces.* From April to September most airfields should be in good condition. From October to March,

many airfields that are not well drained may be unusable. Snow cover may be expected during January and February. Detailed information on airfields is given in Chapter XI, Topic No. 119.

(2) ***Visibility.*** In general, visibilities are good over most of Bulgaria, especially during the summer months. Over the interior, radiation fog is the chief limiting factor with maximum frequency in the cooler portions of the year. Fog is mostly a morning phenomenon and great improvement will be found in the afternoon (see Topic No. 40 above for fog frequency). In the coastal regions and over the sea, poor visibilities are usually associated with the intervals between depressions or in the early stages of their approach or development. However, special cases of poor visibility do occur owing to precipitation, dust or frontal fog within the depressions. Snow showers along cold fronts in winter are especially effective but are a minor cause owing to their rareness over most of the region. There is a high percentage of days with snow over the interior in winter but no data on the effect on visibility are available. Generally speaking, visibility will be better in the afternoon than in the morning and better with north winds than with winds from the remaining quadrants. Visibilities are lowest from November to February. From April to October, flying operations are rarely hampered by low visibilities.

Table IV - 22 gives the number of days with visibilities of two and one-half miles or less for Sofiya, Musala, and Bucureşti (Bucurest). Also see Figure IV - 33 and Tables IV - 9, IV - 10, IV - 13 and IV - 21.

(3) ***Cloud and ceiling.*** The cloudy season is in the colder months. Highest percentage of cloud cover is found from November through May, with maximum in December and January when mean cloudiness in the interior will be about 70 per cent and at coastal points will range from 50 to 60 per cent. The clearest months are July and August with only 10 per cent of cloudiness over portions of the region. Along the coasts this increases northward to 20 per cent while values for the interior are about 40 per cent. A continuous cloud cover rarely persists for more than 24 hours. There is usually a decimal improvement in the afternoon.

Low ceilings are to be expected with passage of cold fronts during the cooler months of the year. Also, where moist air currents are forced to rise over the mountain ranges, low ceilings should be expected. Limited data show that ceilings under 1,000 feet occur very rarely in summer, and six to eight days per month in winter with fewer occurrences toward the coast (Table IV - 20).

(4) ***Turbulence.*** Flights over the Stara-Planina and Rodopi Planina probably would encounter considerable turbulence, especially in winter.

(5) ***Icing on aircraft.*** In January, average temperatures in Bulgaria are below the freezing point except along the Black Sea coast. In April, the mean elevation of the freezing level ranges from about 5,000 to 6,000 feet above sea level. During July, the freezing level averages above 10,000 feet above sea level, but by October it has descended to about 8,000 feet. Frontal activity is confined mainly to the period from September to May. Thunderstorms do not appear to offer any great hazard. The more mountainous areas can be expected to have worse icing conditions.

(6) ***Prevailing winds.*** Prevailing winds are discussed by seasons in Topic No. 40 above and are given in Table IV - 17.

(7) ***Upper winds.*** Upper air observations for Bulgaria are lacking, but it is believed that above 10,000 feet the influence of the prevailing westerlies would be apparent.

(8) ***Flying weather.*** Flying conditions are much better in summer than in winter (as judged by the number of days per month with ceilings 1,000 feet and under and visibilities of two and one-half miles or less). Data for representative stations (Tables IV - 20 and IV - 22) indicate northern Bulgaria has unfavorable flying weather 15 to 50 per cent of the time in winter, 1 to 15 per cent in spring, 1 to 2 per cent in summer, 1 to 30 per cent in autumn, and 10 to 20 per cent for the year as a whole. In the more mountainous regions, conditions are more variable; Sofiya data shows about one-half the unfavorable flying weather of the plains region and Musala data about two times as much.

Winds in Bulgaria do not generally reach high velocities Tables IV - 2 and IV - 17).

TABLE IV - 2
NUMBER OF DAYS WITH GALES
(11-YEAR RECORD)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Plovdiv.	0.7	1.0	0.5	1.2	0.4	1.5	1.5	0.6	0.5	0.4	0.5	0.1	9.9
Sofiya...	1.1	1.5	1.3	1.6	0.8	1.2	1.8	1.0	0.6	1.1	1.1	1.2	14.3
Varna..	2.5	1.7	1.0	1.5	0.5	0.7	1.1	0.8	0.3	1.0	1.4	2.2	14.7
Musala.	2.0	0.9	2.0	—	—	—	—	—	—	—	—	—	—

(9) ***Topography in relation to flying conditions.*** Generally, in summer the Stara-Planina and Rodopi Planina are not too hazardous to flight operations, but during winter they should cause local variations in the weather that would prevent safe flying at low levels. However, the approaches from the Black Sea are favorable insofar as topography is concerned.

D. Chemical warfare.

(1) ***General.*** The effect of climate on chemical warfare operations is considered herein for the following:

(*a*) non-persistent gases dispersed by mortar, rocket or airplane bomb;

(*b*) FS smoke (sulphur trioxide in chlorosulfonic acid) dispersed by aircraft;

(*c*) overhead smoke for cover from aerial observation;

(*d*) screening smokes: oil (mechanical smoke generator) and white phosphorus;

(*e*) persistent agents (e.g., mustard) dispersed by land mine, mortar, rocket, bomb, or airplane spray.

The strategic areas designated as most favorable for such operations are those in which an agent may be used successfully the greatest number of times in a given period. Areas indicated as least favorable are those in which an agent may be used successfully with less frequency than in the rest of Bulgaria. The delineation of these areas is the result of combining data on thunderstorm frequency, fog frequency, wind speeds, and temperatures.

(2) ***Strategical generalizations.*** Throughout the year, the following are generally the most and least favorable areas for operations with specific agents: for non-persistent agents and FS smoke it is most favorable in northwest Bulgaria and least favorable in the southeast (autumn and

winter) and the east central portions (spring and summer); for overhead smoke it is most favorable in the southeast (autumn and winter) and the east central parts (spring and summer) and least favorable in the northwest; for screening smokes it is most favorable in the northeast and least favorable in the central west; and for persistent agents it is most favorable in the west central and least favorable in the central east portions.

Table IV - 3 and Figures IV - 44 to IV - 55 show these strategical generalizations by seasons.

TABLE IV - 3
BULGARIA, FAVORABILITY FOR CHEMICAL WARFARE OPERATIONS BY SEASONS

Type of Gas and Most Favorable Weather Conditions	Degree of Favorability by Area: Most Favorable Area	Degree of Favorability by Area: Least Favorable Area	Distributional Notes	Fig.
WINTER				
Non-persistent and FS. *(High fog frequency, low mean wind speeds, high percentage calms.)*	Northwest portion (latitudes of Samokov to Lom; longitudes of Pleven to Yugoslav Border).	Southeast portion (latitudes of Varna to Turkish Border; longitudes of Burgaz to Sliven).	Conditions less favorable from northwest to southeast.	IV - 34
Overhead Smoke. *(Low fog frequency, high mean wind speeds, low percentage calms.)*	Southeast portion (latitudes of Varna to Turkish Border; longitudes of Burgaz to Sliven).	Northwest portion (latitudes of Samokov to Lom; longitudes of Pleven to Yugoslav Border).	Conditions less favorable from southeast to northwest.	IV - 34
Screening Smokes. *(High fog frequency, higher mean wind speeds, low percentage calms.)*	Northeast portion (latitudes of Ruse to Varna; longitudes of Vetreno to Ruse).	Southwest portion (latitudes of Samokov to Gorna Dhzumaya; longitudes of Plovdiv to Yugoslav Border).	Conditions less favorable from northeast to southwest and from northeast to Varna.	IV - 35
Persistent Agents. *(High fog frequency, low mean wind speeds, high percentage calms, higher mean temperatures.)*	West central portion (small area between Pazardzhik and Gabrovo).	East central portion (small area around and between Omortag and Kotel).	Conditions less favorable rapidly in all directions from most favorable area. South central portion and most of eastern third unfavorable.	IV - 36
SPRING				
Non-persistent and FS. *(High fog frequency, low thunderstorm frequency, low wind speeds, high percentage calms.)*	(1) Northeast corner (around Varna). (2) West central portion (around Pazardzhik). (3) Northwest portion (latitudes of Lom to Kyustendil; longitudes of Yablanitsa to Yugoslav Border).	(1) East central portion (narrow curved area from Popovo to Karnobat). (2) Central west portion (small area south and west of Sofiya).	Conditions less favorable rapidly from favorable areas in west toward Sofiya. Most of eastern half unfavorable.	IV - 37
Overhead Smoke. *(Low fog frequency, high thunderstorm frequency, high wind speeds, low percentage calms.)*	(1) East central portion (narrow curved area from Popovo to Karnobat). (2) Central west portion (small area south and west of Sofiya).	(1) Northeast corner (around Varna). (2) West central portion (around Pazardzhik). (3) Northwest portion (latitudes of Lom to Kyustendil; longitudes of Yablanitsa to Yugoslav Border).	Conditions less favorable rapidly in all directions from favorable area around Sofiya. Most of eastern half favorable.	IV - 37
Screening Smokes. *(High fog frequency, low thunderstorm frequency, higher mean wind speeds, low percentage calms.)*	Northeast portion (latitudes of Rumanian Border to Duskotna; longitudes of Duskotna to western point of Bulgarian-Rumanian land Boundary).	(1) Northwest portion (latitudes of Pleven to Ikhtiman; longitudes of Pleven to Ikhtiman). (2) Small curved area near central western border.	Conditions less favorable rapidly from Sofiya in all directions. Most of broad northwest-southeast belt unfavorable.	IV - 38
Persistent Agents. *(High fog frequency, low thunderstorm frequency, high percentage calms, low mean wind speeds, lower mean temperatures.)*	(1) Northeast corner (around Varna). (2) West central portion (small area around Pazardzhik). (3) Northwest portion (latitudes of Lom to Kyustendil; longitudes of Botevgrad to Yugoslav Border).	(1) Central east portion (small area around Karnobat).	Much variation. Southeast quarter unfavorable.	IV - 39

TABLE IV-3 (*Continued*)

DEGREE OF FAVORABILITY BY AREA

Type of Gas and Most Favorable Weather Conditions	Most Favorable Area	Least Favorable Area	Distributional Notes	Fig.
SUMMER				
Non-persistent Gases and FS. (*Low thunderstorm frequency, high percentage calms, lower mean wind speeds.*)	(1) Northwest portion (latitudes of Lom to Kyustendil; longitudes of Yablanitsa to Yugoslav Border). (2) Southwest portion (small area around Pazardzhik).	Eastern portion (latitudes of Razgrad to Nedelsko; longitudes of Karnobat to Kazanlk).	Western third favorable except around and south of Sofiya. Black Sea coast favorable.	IV - 40
Overhead Smoke. (*High thunderstorm frequency, low percentage calms, higher mean wind speeds.*)	Eastern portion (latitudes of Razgrad to Nedelsko; longitudes of Karnobat to Kazanlik).	(1) Northwest portion (latitudes of Lom to Kyustendil; longitudes of Yablanitsa to Yugoslav Border). (2) Southwest portion (small area around Pazardzhik).	Eastern two-thirds favorable except Black Sea coast. Western third unfavorable except around and south of Sofiya.	IV - 40
Screening Smokes. (*Low thunderstorm frequency, low percentage calms, higher mean wind speeds.*)	Northeast portion (latitudes of Rumanian Border to Burgaz; longitudes of Aitos to Popovo).	Northwest portion (latitudes of Rumanian Border to Samokov; longitudes of Pleven to Sofiya).	Narrow southern extension on east side of most favorable area. Northeast third and southwest portion favorable.	IV - 41
Persistent Agents. (*Low thunderstorm frequency, high percentage calms, lower mean wind speeds, higher mean temperatures.*)	(1) West central portion (small area around Pazardzhik). (2) Northwest portion (latitudes of Lom to Vrattsa; longitudes of Cherven-Breg to Yugoslav Border). (3) Central west portion (around Kyustendil).	(1) Central east portion (latitudes of Isperikh to Nedelsko; longitudes of Karnobat to Gabrovo). (2) South central portion (small area around Chepelare). (3) Central west portion (small areas northwest of Sofiya and northwest of Samokov).	Eastern half unfavorable except Black Sea coast. Conditions varied in west half.	IV - 42
AUTUMN				
Non-Persistent and FS. (*Higher fog frequency, low thunderstorm frequency, high percentage calms, lower mean wind speeds.*)	Northwest portion (latitudes of Rumanian boundary to Samokov; longitudes of Trnovo to Yugoslav Border).	Southeast portion (latitudes of Kotel to Turkish Border; longitudes of Burgaz to Sliven).	Conditions less favorable from northwest to southeast.	IV - 43
Overhead Smoke. (*Lower fog frequency, high thunderstorm frequency, low percentage calms, higher mean wind speeds.*)	Southeast portion (latitudes of Kotel to Turkish Border; longitudes of Burgaz to Sliven).	Northwest portion (latitudes of Rumanian boundary to Samokov; longitudes of Trnovo to Yugoslav Border).	Conditions less favorable from southeast to northwest.	IV - 43
Screening Smokes. (*High fog frequency, low thunderstorm frequency, low percentage calms, higher mean wind speeds.*)	Northeast portion (latitudes of Rumanian Border to Omortag; longitudes of Vetreno to Trnovo).	(1) Central southern portion (latitudes of Stara-Zagora to Turkish border; longitudes of Svilengrad to Chepelare). (2) West central portion (latitudes of Gabrovo to Peshchera; longitudes of Plovdiv to Belovo). (3) Central western portion (latitudes of Botevgrad to Belovo; longitudes of Belovo to Radomir). (4) Southwest portion (latitudes of Botevgrad to Deltchevo; longitudes of Musala to Yugoslav Border).	Conditions unfavorable except in northeast and extreme northwest portions.	IV - 44
Persistent Agents. (*High fog frequency, low thunderstorm frequency, high percentage calms, low mean wind speeds, lower mean temperatures.*)	(1) Central northern portion to west central portion (long narrow area from Svishchov to Ikhtiman). (2) Central west portion (latitudes of Belogradchik to Botevgrad; longitudes of Botevgrad to Yugoslav Border).	(1) Southeast portion (latitudes of Kotel to Turkish Border; longitudes of Burgaz to Sliven).	Northwest portion favorable. Conditions less favorable from northwest to southeast.	IV - 45

E. Sound ranging.

Relative humidity, temperature and pressure data are in Tables IV - 12, IV - 5 and IV - 4 respectively.

F. Type of weather.

During the winter months when anticyclonic conditions prevail, as is normally the case once or twice each month, there is a general tendency for temperatures to fall; winds become light and northerly, and the sky is unusually clear, though at times it is considerably cloudy. Such conditions may last for several days at a time or even for a week or two. While they last, the winds within the country attain no great strength. However, the cold air pours into low-lying regions of the nearby Aegean Sea and reaches gale force which often continues for three, four or even six days.

When a cyclonic depression moves along the Mediterranean area of low pressure, as is frequently the case during winter, the meteorological conditions in Bulgaria undergo a radical change. On the approach of such a depression from the west, the temperature begins to rise and the sky becomes clouded, while the winds become southerly. While it is actually passing over the country, temperature continues to rise until the line of center is reached (it becomes mild or even warm for the time of year), rain falls, and the winds become stronger. As the depression continues to move eastward, northwesterly winds set in with colder weather and often with a considerable fall of snow. Cyclonic depressions of this nature are much less frequent during the summer months.

The most favorable weather conditions occur when a broad belt of equal and moderately high pressure extends from South Russia over the Balkan peninsula to the north coast of Africa, while a shallow low pressure area lies over central Europe, or over the Levant and Syria. In the former, mild clear weather prevails with light southerly winds; in the latter, the temperature is about the mean value for the month, the sky is clear, and light northerly and northwesterly winds prevail.

G. Forecasting.

It has been shown that fog is mostly of a radiational character and tends to clear by early afternoon. In the same way, ceilings tend to improve in the afternoon. Thunderstorms are most frequent between 1200 and 1600.

42. *Meteorological Facilities*

A. Meteorological service.

(1) ***General.*** The weather service of Bulgaria is known as the Central Meteorological Institute of Bulgaria, the executive head of which is called a director. It is supervised by the Minister of Agriculture and appears to work in close coordination with the Director of Aeronautics.

The following is a list of services and activities performed by the Central Meteorological Institute: climatology, agricultural meteorology, chronometry, seismology, meteorology, statistical records, meteorology of mountains, meteorological instruments, forecasts, aerology, maritime meteorology, influence of weather on celestial navigation, and synoptic observations (collection and transmission).

(2) ***Stations.*** In 1934, there were 121 observation stations and 309 rainfall or cooperative stations. Of this number, it is believed that only 98 observation stations and 202 rainfall stations were in operation in 1938. The observation stations were divided as follows: 1 central station, 18 first and second order stations, 32 third order stations, and 47 fourth order stations.

Sofiya, the central station, offers the following services: meteorology (observations and forecasts), seismology, chronometry, library, and records.

Synoptic observations are taken at Sofiya at 0700, 1400 and 2100 local time. These observations consist of pressure, temperature, humidity, amount of clouds, precipitation, present weather, wind direction and velocity, and insolation observations.

In 1932, a meteorological observatory was established at Musala. This station, at an elevation of 2925.4 m., is the second highest station in eastern Europe. Musala takes 6 observations a day; at 0700, 1400 and 2100 local time, and at 0800, 1400 and 2000 zone time. These observations include: pressure, temperature, precipitation, wind direction and velocity, and ceiling and visibility data. In addition to the taking of observations, the observatory was established at Musala in order that certain research problems dealing with mountain meteorology might be carried on.

Table IV - 23 gives a list of the stations in Bulgaria and the observations taken at each.

(3) ***Forecasts issued and observations taken.*** The 0600, 1200 and 1800 observations at Sofiya are broadcast from LZB in the new international code at the following times: 0105, 0705, 0750, 1305, 1350, 1905, and 1950.

All of the synoptic reporting stations (approximately 54 in number) take observations at 0700, 2100 and 1400 local time. The method for collecting these observations is not known.

Pressure readings are reduced to 0° C., but are not reduced for gravity.

(4) ***Reports.*** No information available.

(5) ***Quality of service.*** The meteorological service of Bulgaria is still expanding and it is felt that, although there is a fairly large coverage of observation and rainfall stations, the service is undermanned and not too well equipped. In the annual reports of the Central Meteorological Institute the records are broken and irregular and some stations apparently cease operation for several months at a time.

B. Meteorological equipment and personnel.

(1) ***Equipment.***

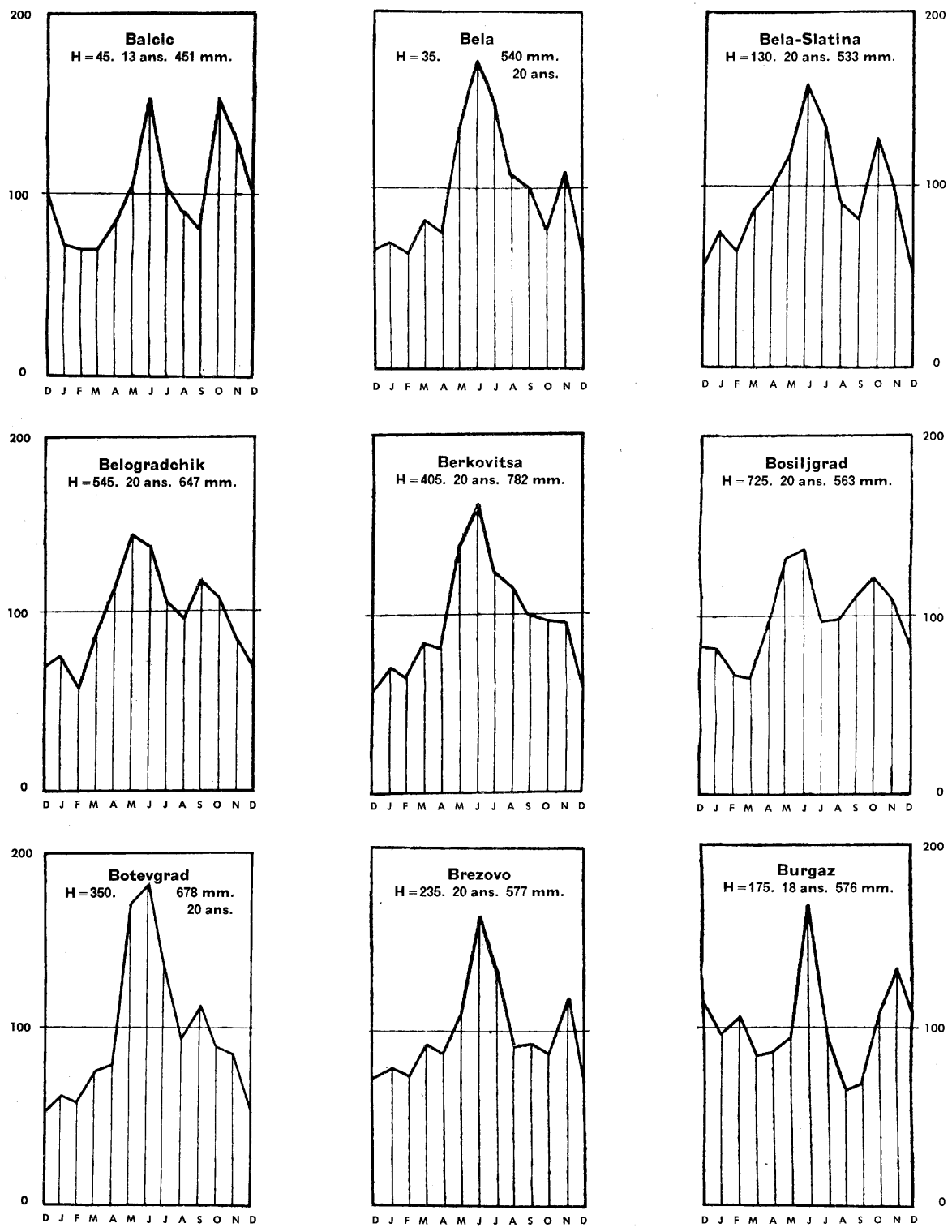
(*a*) *Pilot balloon soundings.* At Sofiya and Burgaz there has been equipment for taking data on winds aloft, but records indicate that balloons were not sent up every day or were defective at altitudes above 10,000 feet.

(*b*) *Meteorograph soundings.* At the 11th meeting (1937) of the International Meteorological Organization, Bulgaria was selected as the site for one meteorograph sounding station. Up to 1940 this station was not yet in operation.

(*c*) *Calibration and repair of instruments.* The Sofiya station is responsible for the maintenance of meteorological instruments.

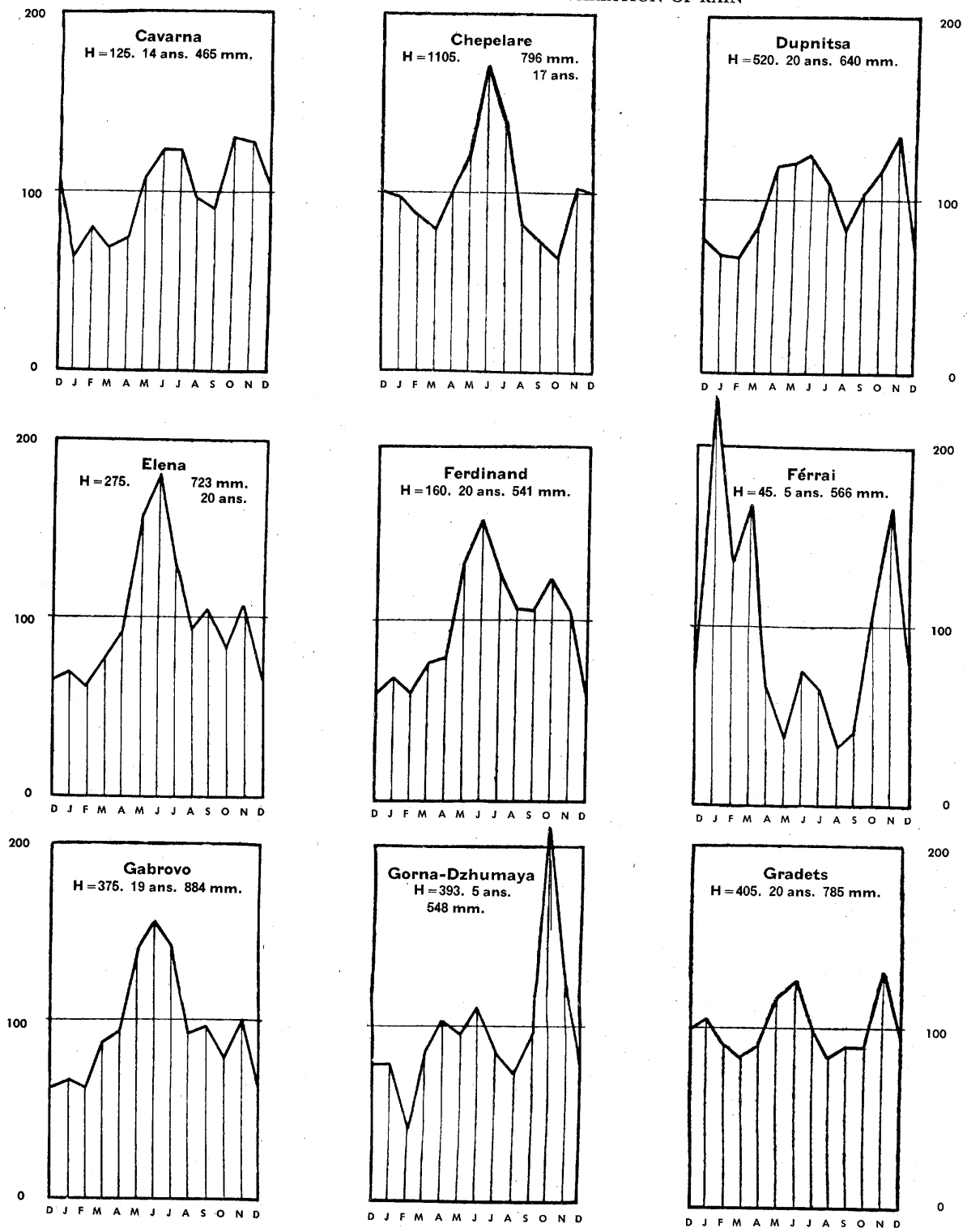
(2) ***Personnel.*** In 1934, the central station at Sofiya was headed by Director K. Kirov. The staff was composed of the following: one director, three assistant directors, one chief controller, two observers, one librarian, three calculator controllers, five calculators, one archivist, one copyist, and two domestics.

FIGURE IV - 33
SELECTED STATIONS, MEAN MONTHLY VARIATION OF RAIN*



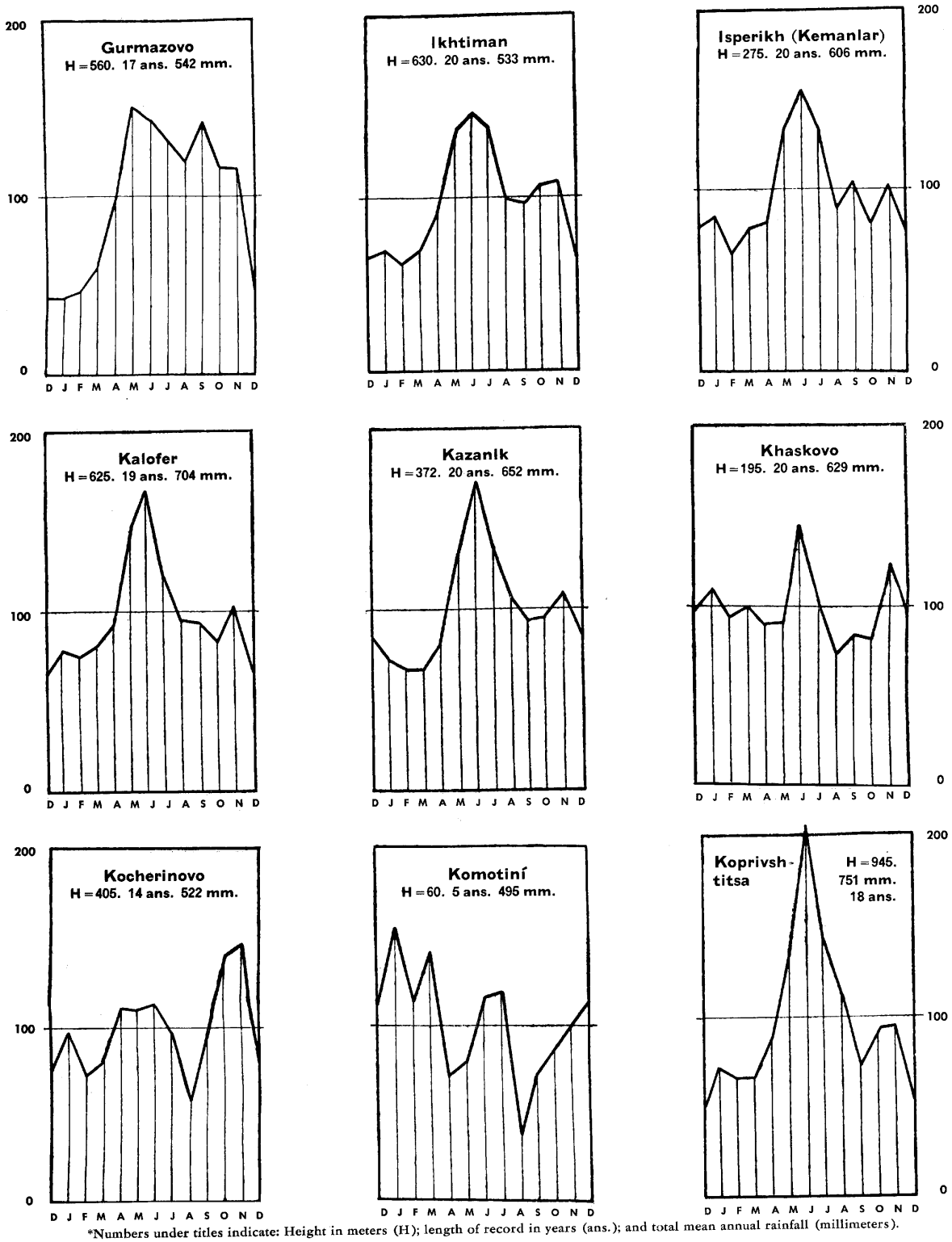
*Numbers under titles indicate: Height in meters (H); length of record in years (ans.); and total mean annual rainfall (millimeters).

FIGURE IV - 33 (*Continued*)
SELECTED STATIONS, MEAN MONTHLY VARIATION OF RAIN*



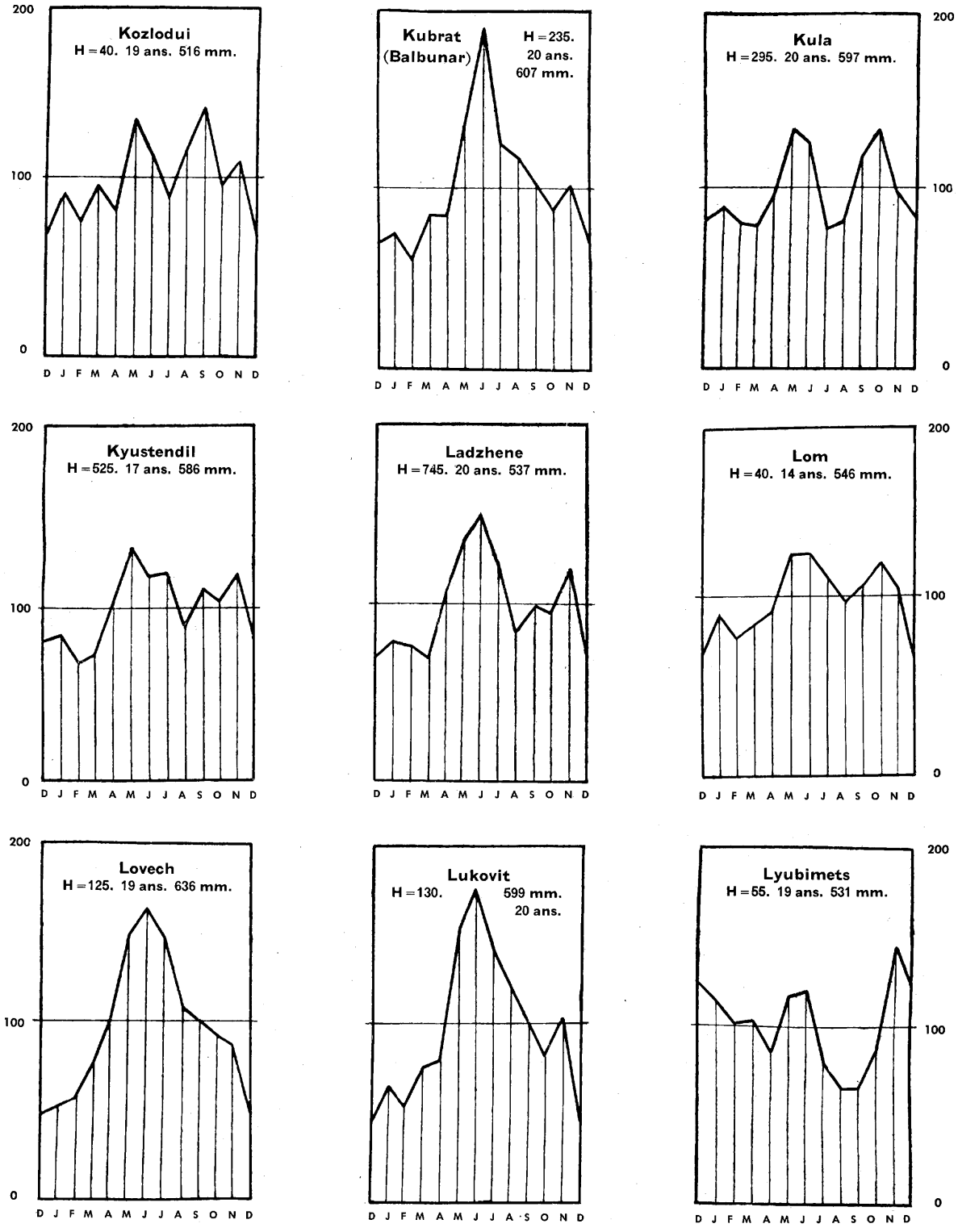
*Numbers under titles indicate: Height in meters (H); length of record in years (ans.); and total mean annual rainfall (millimeters).

FIGURE IV - 33 (*Continued*)
SELECTED STATIONS, MEAN MONTHLY VARIATION OF RAIN*



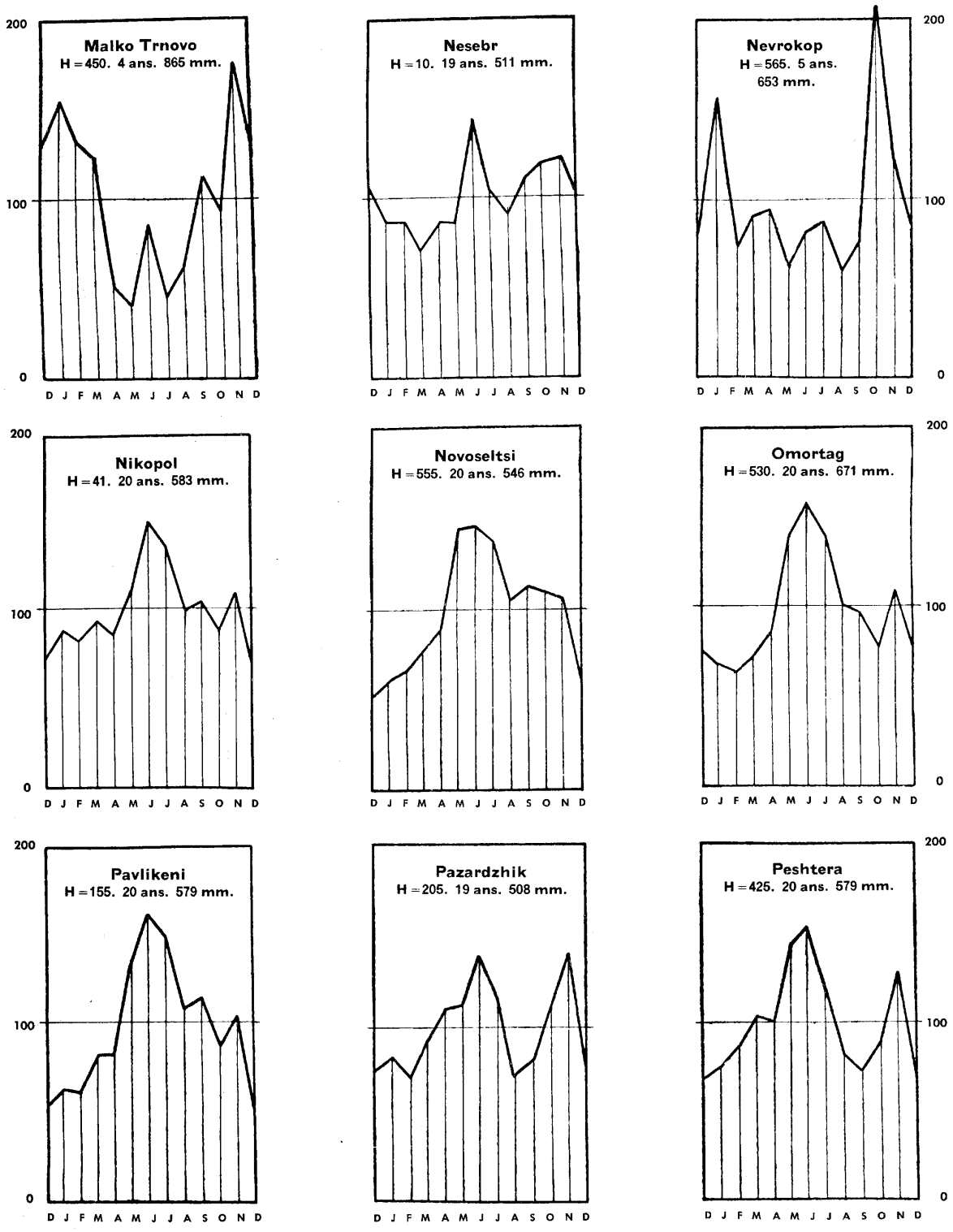
*Numbers under titles indicate: Height in meters (H); length of record in years (ans.); and total mean annual rainfall (millimeters).

FIGURE IV - 33 (*Continued*)
SELECTED STATIONS, MEAN MONTHLY VARIATION OF RAIN*



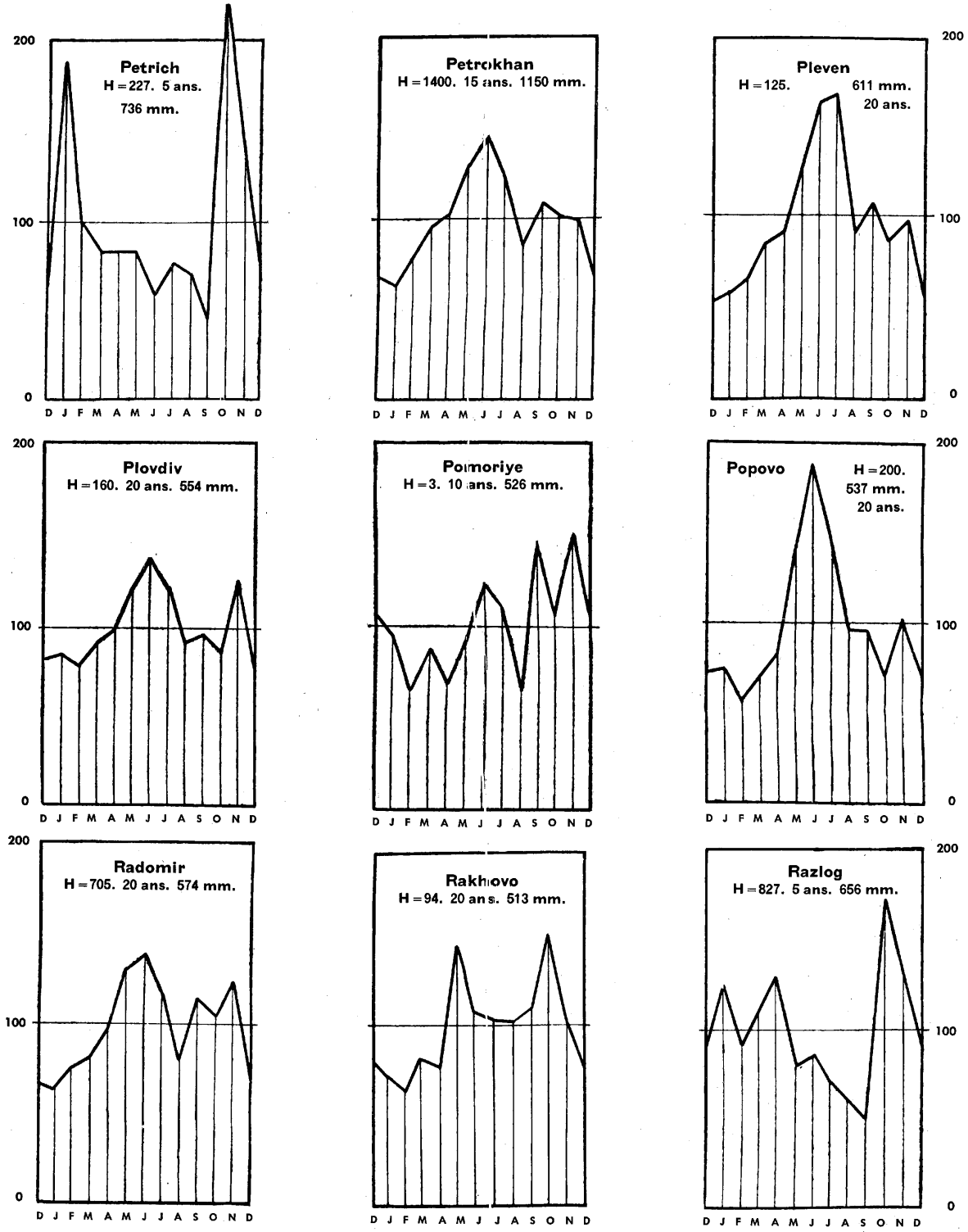
*Numbers under titles indicate: Height in meters (H); length of record in years (ans.); and total mean annual rainfall (millimeters).

FIGURE IV - 33 (*Continued*)
SELECTED STATIONS, MEAN MONTHLY VARIATION OF RAIN*



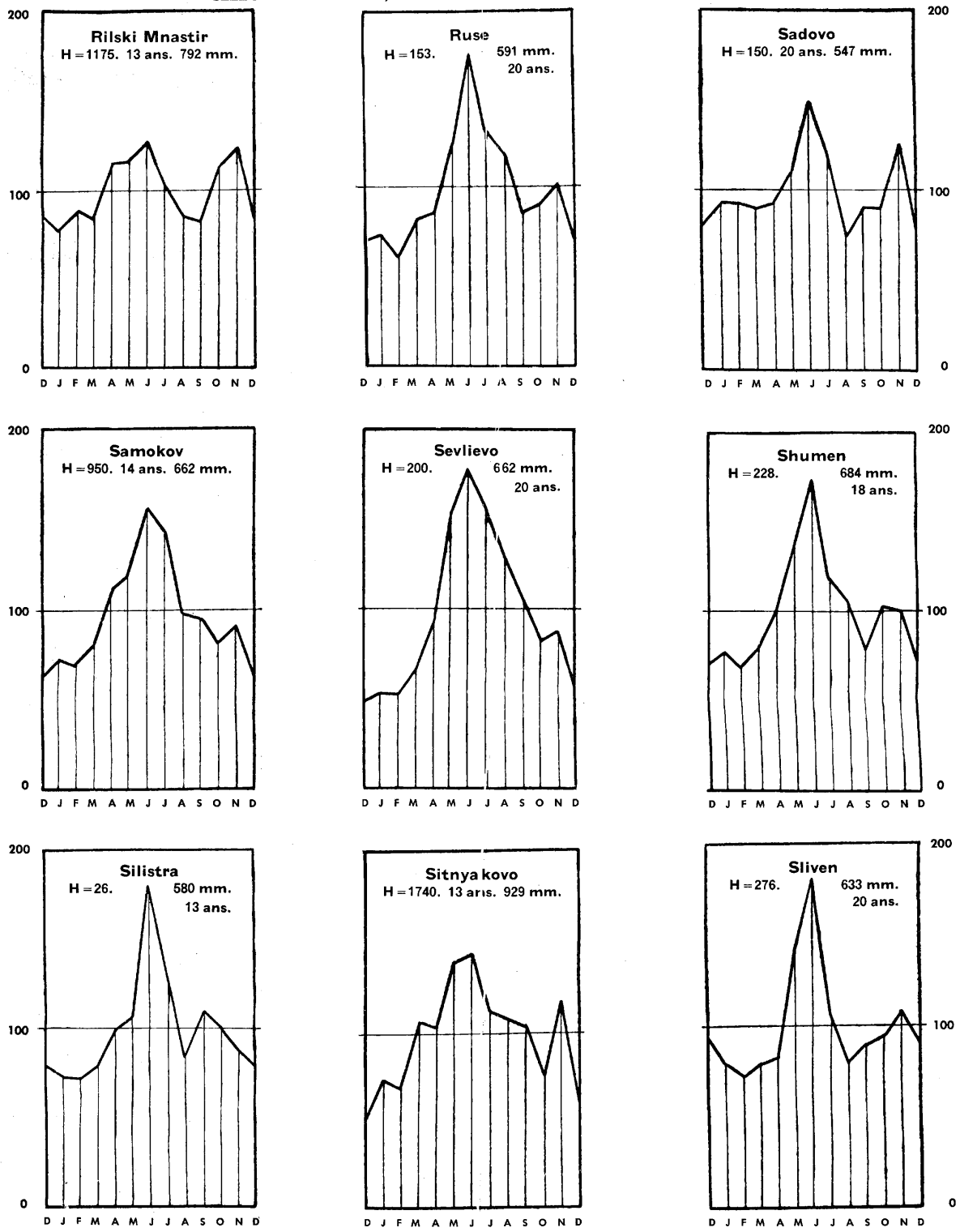
*Numbers under titles indicate: Height in meters (H); length of record in years (ans.); and total mean annual rainfall (millimeters).

FIGURE IV - 33 (*Continued*)
SELECTED STATIONS, MEAN MONTHLY VARIATION OF RAIN*



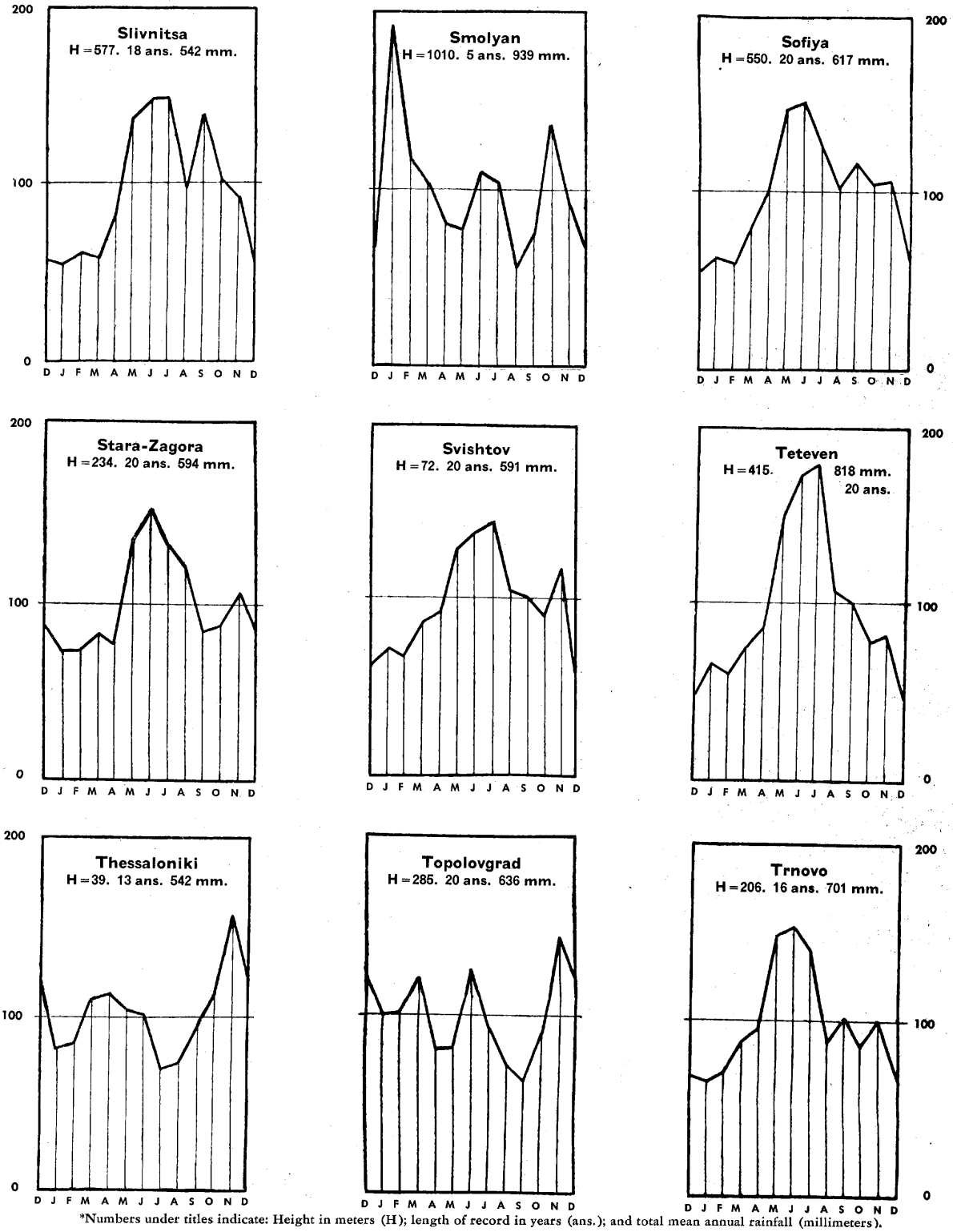
*Numbers under titles indicate: Height in meters (H); length of record in years (ans.); and total mean annual rainfall (millimeters).

FIGURE IV - 33 (*Continued*)
SELECTED STATIONS, MEAN MONTHLY VARIATION OF RAIN*



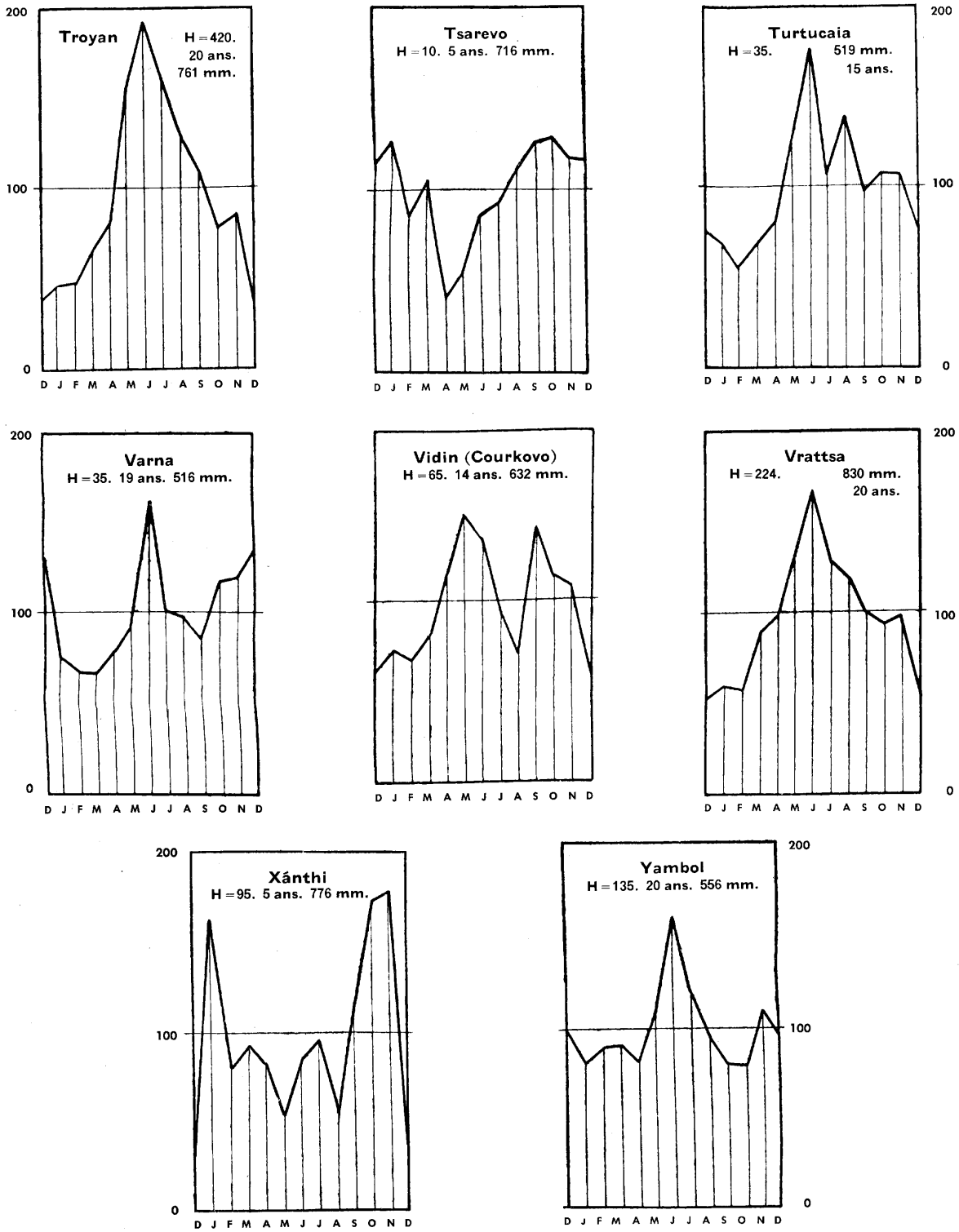
*Numbers under titles indicate: Height in meters (H); length of record in years (ans.); and total mean annual rainfall (millimeters).

FIGURE IV - 33 (*Continued*)
SELECTED STATIONS, MEAN MONTHLY VARIATION OF RAIN*



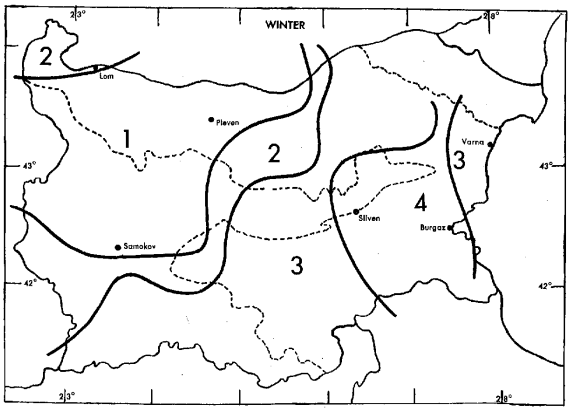
*Numbers under titles indicate: Height in meters (H); length of record in years (ans.); and total mean annual rainfall (millimeters).

FIGURE IV - 33 (*Continued*)
SELECTED STATIONS, MEAN MONTHLY VARIATION OF RAIN*



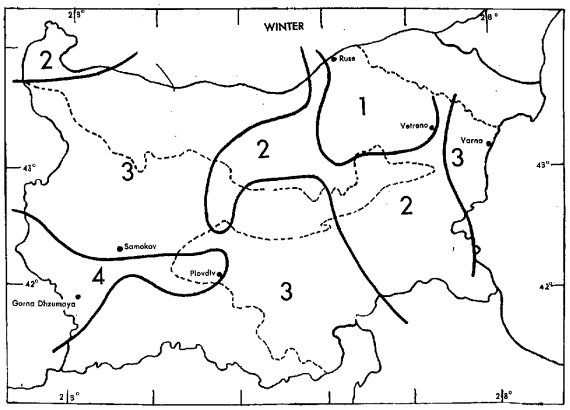
*Numbers under titles indicate: Height in meters (H); length of record in years (ans.); and total mean annual rainfall (millimeters).

FIGURE IV - 34



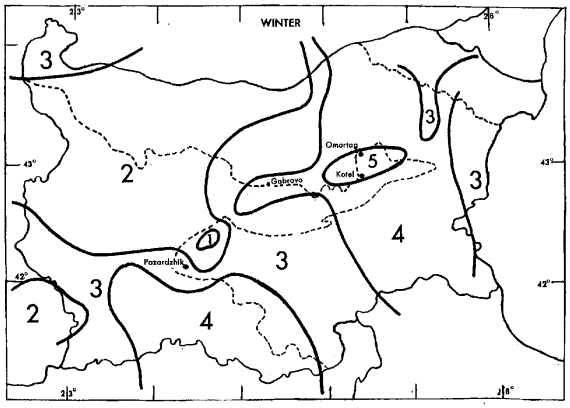
Non-persistent gases, FS from planes. Zone 1 most favorable, zone 4 least favorable. Overhead smoke cover. Zone 4 most favorable, zone 1 least favorable.

FIGURE IV - 35



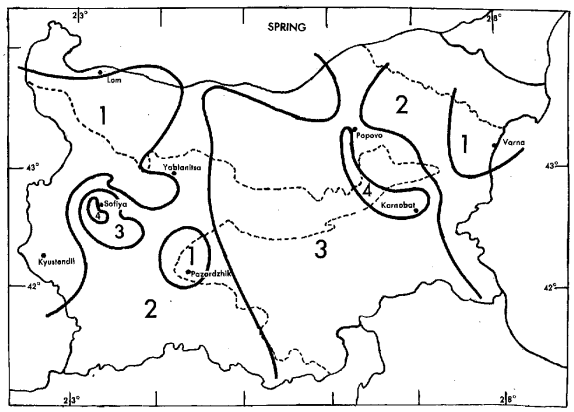
Screening smokes. Zone 1 most favorable, zone 4 least favorable.

FIGURE IV - 36



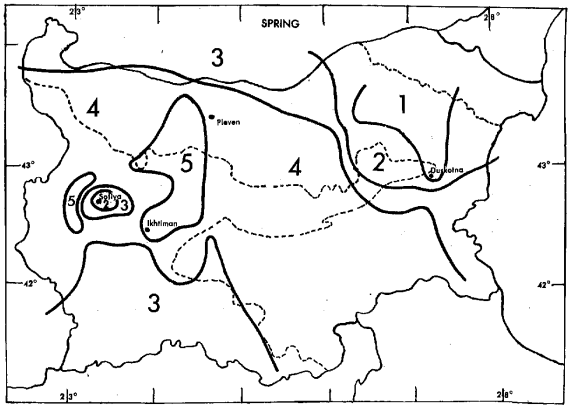
Persistent agents (mustard type). For persistency zone 1 most favorable, zone 5 least favorable.

FIGURE IV - 37



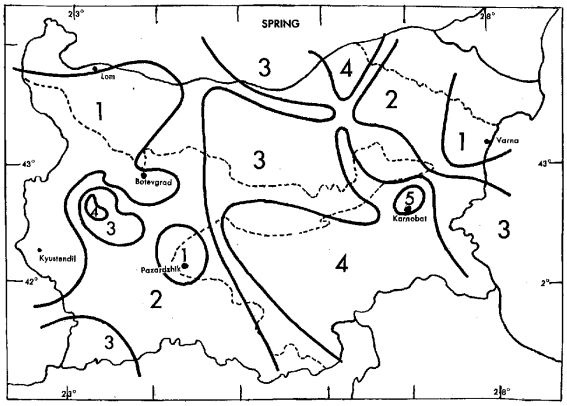
Non-persistent gases, FS from planes. Zone 1 most favorable, zone 5 least favorable. Overhead smoke cover. Zone 4 most favorable, zone 1 least favorable.

FIGURE IV - 38



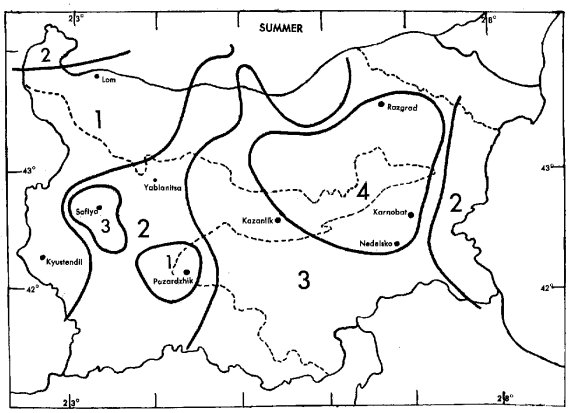
Screening smokes. Zone 1 most favorable, zone 5 least favorable.

FIGURE IV - 39



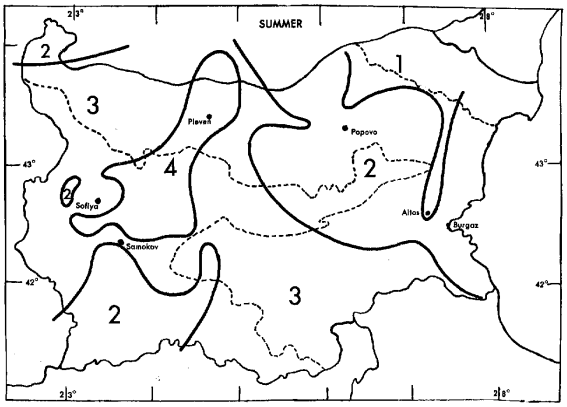
Persistent agents. For persistency zone 1 most favorable, zone 5 least favorable.

FIGURE IV - 40



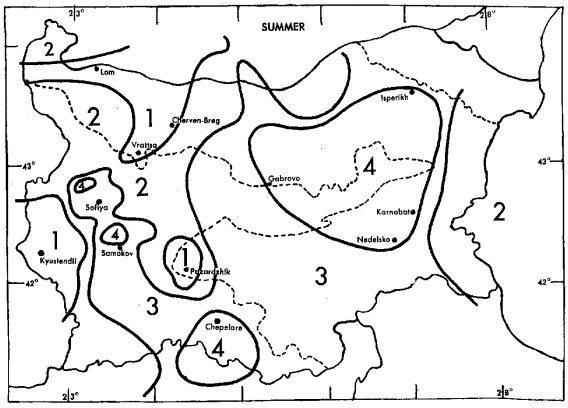
Non-persistent gases, FS from planes. Zone 1 most favorable, zone 4 least favorable. Overhead smoke cover. Zone 4 most favorable, zone 1 least favorable.

FIGURE IV - 41



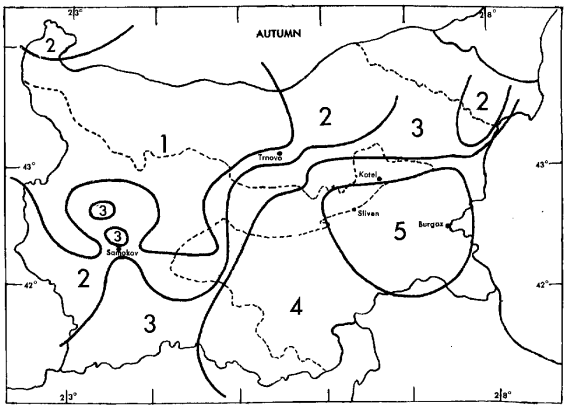
Screening smokes. Zone 1 most favorable, zone 4 least favorable.

FIGURE IV - 42



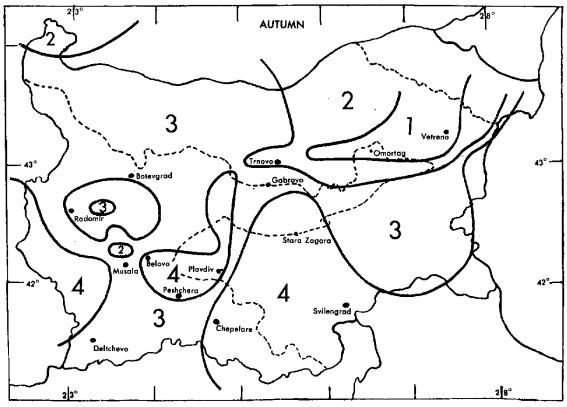
Persistent agents. For vapor concentration zone 1 most favorable, zone 4 least favorable.

FIGURE IV - 43



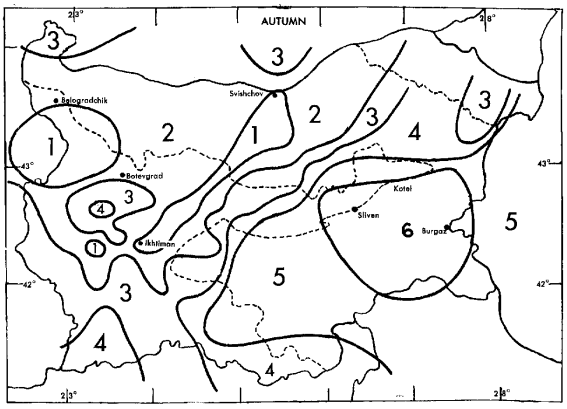
Non-persistent gases, FS from planes. Zone 1 most favorable, zone 5 least favorable. Overhead smoke cover. Zone 5 most favorable, zone 1 least favorable.

FIGURE IV - 44



Screening smokes. Zone 1 most favorable, zone 4 least favorable.

FIGURE IV - 45



Persistent agents. For persistency zone 1 most favorable, zone 6 least favorable.

TABLE IV - 4
BULGARIA, MEAN PRESSURE

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
Varna	30.17	30.05	30.02	29.97	29.98	29.91	29.92	29.96	30.07	30.10	30.08	30.08	30.02	11
MEAN PRESSURE (No Reduction for Gravity)														
Obr. Chiflik	29.57	29.51	29.44	29.37	29.40	29.38	29.37	29.41	29.50	29.55	29.55	29.54	29.46	
Sofiya	28.20	28.12	28.12	28.04	28.09	28.09	28.10	28.13	28.19	28.20	28.18	28.17	28.13	
Burgaz	30.09	30.01	29.95	29.91	29.92	29.88	29.87	29.90	30.00	30.05	30.07	30.06	29.98	
Plovdiv	29.57	29.51	29.44	29.38	29.40	29.38	29.37	29.41	29.49	29.54	29.53	29.54	29.46	
Pleven	29.74	29.66	29.59	29.54	29.55	29.53	29.52	29.56	29.65	29.71	29.72	29.71	29.62	
Gabrovo	28.74	28.67	28.61	28.59	28.63	28.61	28.65	28.65	28.72	28.74	28.73	28.70	28.68	

TABLE IV - 5
BULGARIA, MEAN TEMPERATURES AND RANGE OF TEMPERATURES

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
MEAN TEMPERATURE ° F.														
Gabrovo	30.7	33.9	42.6	50.8	59.6	65.0	68.4	68.1	61.8	53.4	42.2	34.2	50.9	28
Kyustendil	27.7	34.5	41.4	50.7	61.0	65.8	69.8	69.6	61.9	52.9	40.6	35.2	50.9	—
Pazardzhik	34.2	37.0	44.5	53.5	62.8	69.5	73.7	72.2	65.2	55.6	44.6	37.4	54.2	20
Plovdiv	33.3	39.0	45.0	53.8	63.3	69.9	74.2	72.8	65.5	56.8	44.5	37.6	54.6	22
Pleven	29.4	35.0	43.6	53.2	63.2	69.6	74.1	72.2	63.8	55.0	41.6	34.2	52.9	22
Shumen	31.6	35.4	43.0	51.8	60.6	67.3	71.2	70.8	63.8	54.6	44.0	35.6	52.5	25
Sliven	35.0	37.8	44.7	53.0	61.9	68.4	72.8	72.2	65.6	56.8	45.7	38.5	54.4	28
Sofiya	28.4	33.2	41.6	50.2	59.4	65.2	69.1	68.4	61.4	52.8	40.4	33.4	50.3	25
Chepelare	25.5	30.0	34.5	43.3	52.5	57.4	61.0	59.9	52.5	46.6	36.9	31.8	44.3	—
Varna	34.2	38.4	43.0	50.9	60.4	68.4	72.8	72.6	65.7	57.2	47.3	40.4	54.3	18
Vidin	31.8	34.7	44.7	53.4	62.0	69.0	72.4	70.8	63.6	53.0	42.7	31.8	52.5	9
Samokov	25.3	28.8	34.5	43.9	54.0	59.5	63.5	63.1	55.2	47.5	35.8	31.1	45.2	—
Rilski Mnastir	27.3	29.8	34.3	42.6	52.7	56.8	60.8	60.8	53.8	46.8	37.8	32.0	44.6	—
Stara-Zagora	33	39	44	53	63	69	75	74.5	66	57.6	45	39	54.8	—
Khaskovo	31	37	43	53	63	60.1	74	74	65	55.6	43.5	38	53.1	—
Obr. Chiflik	28.8	32.2	42.1	52.0	61.3	67.6	72.0	71.4	63.5	53.2	40.6	32.7	51.4	29
Petrokhan	23.2	24.8	29.1	37.4	47.8	52.9	56.5	56.8	50.4	42.8	31.8	26.6	39.9	29
Kazanlk	33.1	36.0	43.2	51.4	60.1	66.6	71.2	70.5	61.1	53.6	42.4	36.1	52.3	29
Burgaz	35.6	37.9	44.1	51.8	60.1	68.4	73.0	72.7	66.4	57.7	46.9	41.2	54.7	29
Sitnyakovo	23.2	25.5	27.3	35.8	45.3	50.4	54.7	54.9	48.0	41.0	31.8	27.0	39.6	29
Petrich	36.3	38.8	46.8	55.0	64.6	72.0	75.9	75.2	66.7	57.4	45.9	39.0	56.1	29
RANGE OF TEMPERATURE														
Chepelare	54.2	52.1	51.1	53.7	46.9	46.8	49.0	50.6	46.9	53.6	52.4	51.7	—	—
Samokov	52.5	50.5	46.9	48.1	44.1	42.7	43.1	47.2	49.9	48.7	50.1	47.4	—	—
Rilski Mnastir	50.4	45.5	45.6	47.3	46.0	44.6	44.2	48.8	50.0	49.0	45.7	42.7	—	—
Kyustendil	49.4	44.6	46.4	47.2	46.3	44.0	45.0	48.4	48.3	47.3	46.9	43.0	—	—
Sofiya	48.3	46.9	49.4	52.5	44.6	43.2	42.8	45.1	46.6	45.8	48.5	44.0	—	—
Burgaz	43.7	43.1	44.2	45.1	40.4	39.3	36.8	40.8	42.3	44.2	45.4	43.3	—	—
Stara-Zagora	46.7	40.4	41.8	46.6	42.4	38.9	42.0	43.6	45.0	45.9	44.3	41.4	—	—
Kazanlk	46.4	43.4	43.8	47.4	45.5	43.5	44.2	46.1	48.7	52.1	46.0	42.4	—	—
Khaskovo	55.5	46.2	48.3	49.9	49.3	46.8	47.8	55.1	49.4	58.4	52.1	47.3	—	—
Plovdiv	43.0	40.2	37.9	45.3	40.8	38.5	38.6	42.1	43.1	46.3	41.0	37.5	—	—

TABLE IV - 6
BULGARIA, MEAN MAXIMUM AND HIGHEST TEMPERATURES

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
MEAN MAXIMUM TEMPERATURE ° F.														
Gabrovo	38.8	41.9	51.3	61.2	70.5	76.1	80.4	80.6	73.8	63.5	50.4	41.2	60.8	28
Kyustendil	39.6	45.1	54.7	64.0	74.3	79.3	84.0	84.7	75.4	63.9	50.4	42.3	63.1	22
Pazardzhik	42.1	45.7	54.1	65.8	75.7	82.9	88.0	86.4	78.6	66.7	53.2	44.2	65.3	20
Plovdiv	39.6	45.0	54.0	63.9	73.9	80.4	85.3	84.2	76.1	66.0	51.6	43.2	63.6	22
Pleven	36.3	42.4	52.3	64.4	75.0	81.5	86.7	85.1	75.9	64.8	48.9	40.1	62.8	22
Shumen	38.3	42.8	52.7	63.1	72.5	79.0	83.8	84.4	76.1	64.8	51.8	42.1	62.6	25
Sliven	40.1	43.5	51.8	61.3	70.9	77.9	82.4	81.9	74.5	63.9	50.9	43.2	61.9	28
Sofiya	35.2	40.8	50.9	60.4	70.2	76.1	80.8	80.4	72.3	61.9	47.7	39.2	59.7	25
Chepelare	39.6	43.0	48.4	56.5	66.6	72.3	76.1	76.1	69.3	61.7	49.1	43.5	58.5	14
Varna	41.2	45.1	49.8	58.8	68.9	77.5	82.9	83.3	75.6	65.8	54.1	46.4	62.4	18
Vidin	38.3	42.4	54.5	64.6	73.6	81.1	85.1	83.8	75.2	62.1	50.2	36.9	62.3	9
Burgaz	41.7	45.7	50.5	59.9	69.1	77.9	83.3	83.5	76.1	67.1	54.1	46.4	62.9	20

TABLE IV - 6 (*Continued*)

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
						HIGHEST TEMPERATURE ° F.								
Gabrovo	68	74	81	87	94	100	106	102	96	91	84	69	106	28
Kyustendil	65	65	80	86	98	102	107	106	94	85	73	62	107	23
Pazardzhik	66	72	78	91	100	105	105	104	100	91	80	69	105	21
Plovdiv	63	73	83	94	96	102	107	103	96	91	83	68	107	34
Pleven	69	76	85	94	98	105	106	110	99	91	83	70	110	33
Shumen	68	75	82	91	93	97	104	106	98	91	83	71	106	25
Sliven	59	71	76	87	90	96	103	101	94	85	71	65	103	28
Sofiya	62	68	76	86	93	96	102	99	95	82	74	69	102	37
Chepelare	58	64	72	77	87	90	94	94	88	83	70	63	94	14
Varna	65	74	85	90	96	99	106	103	92	89	79	70	106	23
Vidin	67	67	76	87	90	99	105	106	92	86	77	64	106	9
Burgaz	65	77	81	91	94	99	106	103	94	90	81	68	106	23

TABLE IV - 7

BULGARIA, MEAN MINIMUM AND LOWEST TEMPERATURES

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
						MEAN MINIMUM TEMPERATURE ° F.								
Gabrovo	22.6	25.9	33.8	40.3	48.6	53.8	56.3	55.6	49.8	43.3	34.0	27.1	40.9	28
Kyustendil	23.7	27.0	33.8	40.8	48.9	54.0	57.0	55.9	50.4	43.2	33.8	29.8	41.5	22
Pazardzhik	26.2	28.4	34.9	41.2	49.8	56.1	59.4	57.9	51.8	44.4	36.1	30.7	43.1	22
Plovdiv	27.0	32.9	36.0	43.7	52.7	59.4	63.0	61.5	54.9	47.5	37.4	32.0	45.7	22
Pleven	22.5	27.5	34.9	41.9	51.3	57.7	61.5	59.2	57.8	45.1	34.3	28.4	43.0	22
Shumen	25.0	27.9	33.4	40.5	48.7	55.6	58.6	57.2	57.4	44.4	36.1	29.1	42.3	26
Sliven	29.8	32.2	37.6	44.6	52.9	59.0	63.1	62.6	56.7	49.6	40.5	33.8	46.9	29
Sofiya	21.6	25.7	32.2	39.9	48.6	54.3	57.4	56.3	50.4	43.7	33.1	27.7	40.9	25
Chepelare	16.5	20.3	26.6	33.1	40.3	45.0	46.8	45.5	40.3	35.8	28.2	24.3	33.6	14
Varna	27.3	31.6	36.1	43.0	51.8	59.2	62.6	61.9	55.8	48.7	40.5	34.3	46.1	18
Vidin	25.2	27.0	34.9	42.3	50.5	57.0	59.7	57.7	52.0	43.9	35.2	26.6	42.7	9
Burgaz	28.6	32.2	36.3	43.2	52.5	59.2	62.6	62.1	56.1	50.4	39.9	34.5	46.5	20
						LOWEST TEMPERATURE ° F.								
Gabrovo	−16	−14	− 3	13	30	38	44	42	27	13	− 3	−10	−16	28
Kyustendil	−14	− 8	4	23	33	38	46	43	26	22	− 7	− 7	−14	22
Pazardzhik	−13	− 9	− 3	23	32	43	48	44	30	22	− 6	−10	−13	23
Plovdiv	− 5	− 1	0	24	36	39	52	45	35	23	1	− 2	− 5	34
Pleven	−13	−14	5	24	33	42	48	45	29	18	− 3	−11	−14	33
Shumen	−13	−12	10	21	28	38	45	44	31	11	− 2	− 5	−13	26
Sliven	0	11	14	26	32	43	50	48	35	15	14	7	0	28
Sofiya	−24	−15	− 1	21	29	36	46	41	29	19	−13	− 7	−24	37
Chepelare	−19	−15	− 4	12	23	32	36	33	18	12	− 7	− 7	−19	14
Varna	− 3	6	14	28	34	44	43	49	34	27	13	6	− 3	23
Vidin	− 5	− 4	17	27	32	43	47	44	37	24	8	− 9	− 9	9
Burgaz	1	9	13	27	30	42	51	50	35	31	9	7	1	23

TABLE IV - 8

BULGARIA, NUMBER OF DAYS WITH FROST ALL DAY AND WITH FROST

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
						NUMBER OF DAYS WITH FROST ALL DAY*								
Gabrovo	9.0	6.3	1.0	—	—	—	—	—	—	0.1	2.2	6.9	25.5	28
Kyustendil	6.0	2.1	0.2	—	—	—	—	—	—	†	0.6	3.3	12.2	23
Pazardzhik	3.8	2.3	0.2	—	—	—	—	—	—	—	0.6	2.4	9.3	21
Plovdiv	8.0	3.0	—	—	—	—	—	—	—	—	1.0	2.0	14.0	—
Pleven	8.5	5.2	0.4	—	—	—	—	—	—	0.1	1.9	6.8	22.9	28
Shumen	8.4	5.0	0.6	—	—	—	—	—	—	0.1	1.6	4.4	20.1	25
Sliven	5.0	2.7	0.3	—	—	—	—	—	—	0.1	0.6	2.2	10.9	28
Sofiya	11.0	5.0	1.0	—	—	—	—	—	—	—	2.0	6.0	25.0	—
Chepelare	6.2	3.5	1.1	0.1	—	—	—	—	—	—	1.5	3.2	15.6	16
Vidin	5.7	2.8	0.1	—	—	—	—	—	—	—	0.6	7.4	16.6	9
Samokov	9.0	6.0	2.0	—	—	—	—	—	—	—	3.0	4.0	—	—
Rilski Mnastir	5.0	2.0	1.0	—	—	—	—	—	—	—	1.0	4.0	—	—
Burgaz	5.0	2.0	1.0	—	—	—	—	—	—	—	1.0	2.0	—	—
Stara-Zagora	5.0	1.0	—	—	—	—	—	—	—	—	—	1.0	—	—
Kazanlk	5.0	1.0	—	—	—	—	—	—	—	—	1.0	1.0	—	—
Khaskovo	4.0	1.0	—	—	—	—	—	—	—	—	—	2.0	—	—

*Maximum temperature less than 32° F.
†Less than one tenth.

TABLE IV - 8 (*Continued*)

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
NUMBER OF DAYS WITH FROST#														
Gabrovo	25.2	20.4	13.5	2.8	0.1	—	—	—	0.3	1.7	12.7	21.8	98.5	28
Kyustendil	25.3	19.7	12.3	2.2	—	—	—	—	0.2	2.1	12.1	19.1	93.0	23
Pazardzhik	23.5	17.8	10.3	2.0	†	—	—	—	0.2	1.6	8.6	17.7	81.7	23
Plovdiv	24.0	13.0	7.0	—	—	—	—	—	—	—	7.0	12.0	63.0	—
Pleven	24.2	19.6	10.8	1.4	—	—	—	—	0.2	1.1	10.8	21.7	89.8	28
Shumen	23.0	18.4	13.3	2.4	0.2	—	—	—	†	1.3	10.9	18.6	88.1	26
Sliven	17.7	13.8	6.8	0.6	†	—	—	—	—	0.1	5.5	12.4	56.9	29
Sofiya	28.0	21.0	15.0	4.0	—	—	—	—	—	—	14.0	21.0	103.0	—
Chepelare	27.6	23.5	24.3	12.5	1.1	—	—	—	2.3	9.7	18.8	25.3	145.1	16
Vidin	23.4	17.9	10.3	1.0	0.1	—	—	—	—	1.6	10.5	21.9	86.7	9
Samokov	29.0	25.0	24.0	10.0	—	—	—	—	—	—	19.0	26.0	—	—
Rilski Mnastir	28.0	23.0	23.0	9.0	—	—	—	—	—	—	15.0	23.0	—	—
Burgaz	22.0	14.0	8.0	11.0	—	—	—	—	—	—	6.0	12.0	—	—
Stara-Zagora	21.0	10.0	9.0	1.0	—	—	—	—	—	—	8.0	14.0	—	—
Kazanlk	27.0	16.0	12.0	2.0	—	—	—	—	—	—	11.0	17.0	—	—
Khaskovo	19.0	10.0	8.0	1.0	—	—	—	—	—	—	6.0	11.0	—	—

#Minimum temperature less than 32° F.
†Less than one tenth.

TABLE IV - 9
BULGARIA, MEAN ANNUAL AND MAXIMUM RAINFALL

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
MEAN ANNUAL RAINFALL (Inches)														
Gabrovo	2.08	1.61	2.46	2.87	4.28	4.78	4.14	3.22	2.66	2.65	2.62	1.95	35.32	28
Pazardzhik	1.45	1.16	1.67	1.80	2.05	2.20	1.81	1.32	1.22	1.85	2.24	1.44	20.21	24
Kyustendil	1.67	1.38	1.50	1.83	2.54	2.44	2.23	1.56	2.01	2.27	2.17	1.84	23.46	24
Plovdiv	1.46	1.38	1.54	1.65	2.01	2.40	2.16	1.61	1.69	1.54	2.16	1.42	21.02	20
Pleven	1.36	1.22	1.67	1.78	2.82	3.38	3.37	1.79	1.74	1.98	2.00	1.25	24.36	28
Shumen	1.78	1.33	1.69	2.09	3.24	3.55	2.76	2.16	1.50	2.31	2.35	1.83	26.59	26
Sliven	1.69	1.47	1.57	1.80	2.81	3.44	2.00	1.50	1.54	1.90	2.22	1.86	23.80	29
Sofiya	1.26	1.18	1.54	1.97	2.95	3.07	2.56	2.05	2.40	2.09	2.13	1.10	24.30	20
Chepelare	2.39	2.17	1.98	2.52	3.09	4.47	3.85	2.30	1.99	1.69	2.67	2.49	31.61	16
Varna	1.30	1.14	1.14	1.34	1.57	2.72	1.69	1.65	1.42	2.01	2.01	2.32	20.31	19
Vidin	1.95	0.94	1.85	1.96	2.79	2.98	2.27	1.61	2.92	2.68	1.65	1.87	25.47	10
Vrshets	2.20	1.56	2.42	2.45	4.30	4.50	3.78	2.50	2.83	3.48	2.57	1.97	34.56	15
Samokov	1.59	1.67	1.85	2.42	2.81	3.31	2.70	2. 0	1.76	1.81	2.02	1.22	25.16	
Rilski Mnastir	1.90	2.44	2.17	3.11	3. 1	3.36	2.40	2.12	1.63	2.06	3.43	1. 9	29.62	
Burgaz	1.85	2.24	1.61	1.77	2.02	3.38	1.55	1.18	0.87	1.98	2.52	2.05	23.02	29
Stara-Zagora	1.46	1.85	1.69	1.58	2.44	3.35	2.15	1.61	0.99	1.58	2.36	1.81	22.87	
Kazanlk	1.73	1.81	1.46	1.73	2.76	3.74	2.23	1.51	1.76	2.08	2.48	1.69	24.98	29
Khaskovo	2.52	2.32	2.13	2.05	1.88	2.94	1.63	1.32	1.13	1.42	3.03	2.20	24.57	
Obr. Chiflik	1.22	1.18	1.46	1.61	2.32	3.54	2.52	2.05	1.57	1.57	2.24	1.38	22.66	29
Petrokhan	2.28	3.15	3.50	3.98	4.68	5.55	4.37	3.15	4.13	3.62	3.78	2.40	44.59	29
Sitnyakovo	2.13	2.13	3.15	3.15	4.13	4.37	3.31	3.15	3.15	2.24	3.54	1.57	36.02	20
Petrich	2.36	3.03	2.36	2.56	1.73	1.38	1.22	0.75	0.79	2.99	3.54	1.77	24.48	29
Popovo	1. 6	1. 2	1. 7	1. 9	3. 1	4. 0	3. 4	1. 9	2. 0	1. 2	1. 2	1. 9	25. 1	10
Simeonovgrad	2. 1	1. 4	1. 1	1. 9	2. 0	3. 1	2. 0	1. 5	1. 7	1. 8	1. 3	2. 3	22. 2	10
Malko Trnovo	4. 4	4. 3	2. 4	2. 1	1. 8	2. 5	1. 0	1. 1	3. 4	2. 9	4. 2	5. 7	35. 8	8
Ivailovgrad	2. 4	1. 9	1. 5	2. 2	2. 1	2. 2	1. 2	1. 2	1. 9	3. 2	1. 9	2. 8	24. 5	9
Batak	1. 9	2. 1	1. 5	2. 1	3. 6	3. 7	2. 3	2. 4	2. 4	2. 3	1. 6	1. 8	27. 7	10
Lom	1. 7	1 .0	1. 4	1. 4	2. 4	2. 5	2. 0	1. 0	2. 3	2. 1	1. 6	1. 0	20. 4	10
MAXIMUM RAINFALL IN 24 HOURS (Inches)														
Gabrovo	1.45	1.44	2.03	1.87	1.97	2.89	2.56	5.20	2.93	3.17	2.01	2.30	5.20	28
Pazardzhik	3.08	0.94	1.37	3.42	1.50	2.82	2.16	2.20	1.85	2.95	1.74	1.54	3.42	24
Kyustendil	1.38	1.61	1.98	1.35	1.74	1.91	1.61	1.36	1.92	1.77	2.35	2.66	2.66	24
Pleven	1.25	1.67	1.27	1.42	2.28	2.16	3.95	2.20	3.17	2.09	1.50	1.28	3.95	28
Shumen	1.54	1.03	1.00	1.57	2.54	2.71	2.96	3.41	1.89	2.63	2.00	1.89	3.41	26
Sliven	1.25	1.60	1.43	0.98	2.45	5.97	3.33	2.08	2.56	3.35	2.66	1.69	5.97	29
Sofiya	0.82	1.03	1.51	2.25	2.92	2.03	2.07	3.98	2.91	1.71	1.28	1.02	3.98	21
Chepelare	2.87	1.25	1.18	1.71	1.85	2.60	2.07	1.71	1.73	2.05	2.36	2.51	2.87	16
Varna	1.14	1.74	0.93	1.31	1.54	1.58	3.87	2.92	3.54	2.23	2.58	1.34	3.87	15
Vidin	1.77	0.82	1.51	1.96	2.31	2.17	4.33	2.28	4.35	2.30	1.12	1.06	4.35	10
Vrshets	1.42	0.89	1.30	1.91	2.66	2.13	2.19	2.69	2.56	1.89	1.50	1.34	2.69	15

TABLE IV - 10

BULGARIA, NUMBER OF DAYS WITH PRECIPITATION

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
	NUMBER OF DAYS WITH PRECIPITATION (0.1 inch or more)													
Gabrovo	12.1	10.5	11.7	12.1	14.7	14.4	10.7	8.0	8.1	9.5	9.8	10.5	132.0	28
Kyustendil	7.8	7.4	6.6	8.1	11.2	10.6	7.5	5.3	6.1	7.7	7.7	7.7	93.7	24
Plovdiv	7	8	8	7	9	13	6	4	5	7	10	8	92	
Pleven	10.2	8.7	9.4	9.3	12.4	11.7	8.8	6.0	6.8	9.2	9.7	9.6	111.8	28
Shumen	12.2	10.4	10.4	10.3	13.3	12.7	9.2	6.7	6.2	9.2	9.6	11.8	122.0	26
Sliven	8.5	7.9	8.2	9.3	11.4	11.4	7.0	5.3	5.1	6.9	8.2	8.4	97.6	29
Sofiya	8	11	10	11	14	14	10	6	10	10	10	9	123	10
Chepelare	11.7	10.9	11.4	12.5	14.3	15.5	10.9	7.6	7.7	7.5	10.8	10.1	130.9	16
Varna	8	11	8	8	10	11	7	4	5	9	9	9	99	10
Vidin	10.3	7.2	9.8	10.1	9.8	10.5	8.4	5.5	7.9	9.5	8.5	12.4	109.0	10
Vrshets	9.8	7.9	9.7	9.1	13.1	11.4	9.6	6.8	6.9	10.1	9.3	10.5	114.2	15
Obr. Chiflik	10	11	8	10	12	12	9	6	6	9	9	9	108	
Petrokhan	12	14	13	14	16	16	11	8	10	11	11	13	147	
Kazanlk	9	10	9	11	14	13	9	8	7	8	9	9	115	
Burgaz	9	10	9	9	10	10	6	4	5	7	8	9	94	
Sitnyakovo	11	12	13	13	16	15	11	9	9	10	11	11	141	
Petrich	8	7	7	7	7	5	4	3	3	8	7	7	72	
Batak	6.8	7.1	6.2	7.3	11.7	9.1	5.3	6.2	5.8	5.8	5.8	6.1	83.2	10
Lom	8	12	10	9	10	11	7	4	8	9	11	10	109	10
Popovo	6	7	6	7	9	9	6	4	4	6	8	5	77	10
Khaskovo	7	10	9	9	9	11	7	5	5	7	11	10	101	10
Simeonovgrad	5	8	7	7	7	8	5	3	4	4	8	7	73	10
Stara-Zagora	7	10	9	9	11	13	8	5	6	8	11	8	105	10
Pazardzhik	6	9	9	7	9	11	6	4	6	7	9	7	90	10
Samokov	11	13	12	12	13	15	10	7	10	10	12	10	135	10
Rilski Mnastir	9	13	10	12	15	16	9	7	9	10	12	10	132	10

TABLE IV - 11

BULGARIA, GREATEST AND LEAST PRECIPITATION

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
	GREATEST PRECIPITATION (Inches)													
Gabrovo	4.32	3.54	5.11	6.49	7.17	10.66	8.40	13.11	8.39	8.14	7.17	4.59	50.84	28
Kyustendil	3.53	2.75	3.76	4.17	5.14	5.15	4.58	4.61	5.88	6.10	5.96	3.95	30.85	24
Pazardzhik	4.99	3.37	3.35	5.64	5.81	6.50	6.54	3.52	4.14	7.63	7.36	2.89	30.02	24
Plovdiv	6.11	3.78	2.74	4.60	4.53	8.74	4.87	5.54	5.39	7.52	4.77	5.43	33.09	26
Pleven	3.69	4.10	3.38	3.54	5.59	7.43	9.09	4.54	8.42	6.61	5.50	3.00	34.18	28
Shumen	4.24	3.12	3.43	4.83	6.05	7.50	6.67	9.52	5.16	7.85	4.98	4.41	39.22	26
Sliven	4.13	4.48	3.70	3.42	7.39	10.23	5.58	6.37	5.92	6.12	4.59	5.01	36.65	29
Sofiya	5.06	2.89	4.13	3.73	8.56	7.31	6.38	8.91	5.54	6.88	6.47	3.35	34.87	26
Chepelare	4.70	5.18	3.84	4.69	5.58	10.63	6.92	5.33	4.32	5.15	6.81	6.13	43.18	16
Varna	4.21	3.69	3.35	4.07	4.65	6.60	6.47	7.02	5.78	6.77	4.63	5.12	33.58	26
Vidin	3.91	2.33	3.54	4.13	4.82	4.89	6.65	3.13	8.64	5.42	2.99	3.63	28.55	10
Vrshets	4.04	3.44	4.33	6.38	8.11	9.30	7.72	5.07	7.88	10.27	5.36	5.17	45.14	15
	LEAST PRECIPITATION (Inches)													
Gabrovo	0.31	0.00	0.34	0.82	1.04	1.57	0.73	0.14	0.03	0.09	0.05	0.13	26.32	28
Kyustendil	0.04	0.05	0.11	0.40	0.74	0.33	0.13	0.05	0.00	0.16	0.12	0.28	17.83	24
Pazardzhik	T	0.09	0.14	0.37	0.29	0.57	0.00	0.04	0.09	0.19	0.31	0.17	13.70	24
Plovdiv	.04	.02	.32	.30	.32	.83	.16	.00	.04	.00	.00	.17	11.26	26
Pleven	.17	.00	.38	.17	.72	.69	.61	.29	.00	.02	.04	.05	18.22	28
Shumen	.14	.05	.30	.58	.34	.60	.36	.18	.04	.09	.07	.55	18.89	26
Sliven	.17	.00	.12	.31	.17	.48	.04	.14	.04	.01	.00	.15	16.13	29
Sofiya	.20	.24	.42	.35	.80	1.24	.00	.16	.10	.09	.00	.05	17.40	26
Chepelare	.49	.02	1.10	.85	.74	1.00	1.00	.23	.30	.05	.81	.57	21.23	16
Varna	.08	.04	.03	.16	.11	.25	.12	.03	.00	.11	.08	.10	13.11	26
Vidin	.22	.01	.47	.20	1.74	1.10	.30	.21	.07	.58	.07	.60	21.11	10
Vrshets	.13	.00	.51	.34	1.34	.93	.87	.31	.38	.36	.13	.46	19.81	15

TABLE IV - 12
BULGARIA, RELATIVE HUMIDITY (PER CENT)

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
Gabrovo	81	79	75	69	73	75	71	69	73	79	81	83	76	28
Kyustendil	80	76	68	61	62	63	60	58	65	75	78	82	69	22
Pazardzhik	80	78	74	69	69	66	61	61	68	78	82	84	72	22
Plovdiv	80	78	72	66	67	66	60	60	66	75	79	81	71	15
Pleven	82	81	74	65	67	66	61	60	66	77	82	86	72	28
Shumen	81	80	74	67	71	71	66	64	68	77	80	83	74	26
Sliven	73	71	66	61	62	60	55	54	58	67	72	76	65	29
Sofiya	82	79	72	66	66	69	64	62	67	77	81	83	72	15
Chepelare	75	76	75	71	71	73	70	71	75	76	77	79	74	16
Varna	79	79	78	73	75	77	72	70	72	78	78	82	76	15
Vidin	83	83	79	71	75	72	68	69	77	85	86	89	78	9
Vrshets	78	77	71	66	70	66	64	65	71	80	82	83	73	14
Obr. Chiflik	85	83	76	68	71	71	66	63	68	77	83	88	75	
Samokov	77	80	77	71	69	71	66	63	70	78	80	82	74	
Rilski Mnastir	72	71	71	67	71	70	66	63	71	76	78	79	71	
Burgaz	80	83	81	77	79	77	74	72	75	81	82	84	79	15
Stara-Zagora	73	73	68	61	61	63	53	50	58	69	74	77	65	
Kazanlk	77	75	69	63	64	66	57	54	63	73	78	79	68	
Khaskovo	81	82	78	70	68	70	60	58	66	76	82	84	73	

TABLE IV - 13
BULGARIA, NUMBER AND MAXIMUM NUMBER OF DAYS WITH SNOWFALL

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
NUMBER OF DAYS WITH SNOWFALL														
Gabrovo	8.8	8.2	6.2	1.3	*	—	—	—	*	0.6	4.2	6.6	35.9	28
Kyustendil	4.6	4.2	2.6	0.4	*	—	—	—	—	0.1	2.6	3.7	18.2	27
Pazardzhik	3.6	3.8	2.0	0.3	—	—	—	—	—	0.1	1.7	2.3	13.8	24
Plovdiv	6.0	4.0	3.0	0.5	—	—	—	—	—	—	2.0	2.0	17.5	
Pleven	6.8	4.7	3.6	0.5	*	—	—	—	*	0.3	2.8	5.1	23.8	28
Shumen	9.0	7.5	5.1	1.0	0.1	—	—	—	*	0.2	3.5	6.5	32.9	26
Sliven	6.7	5.7	3.8	0.7	—	—	—	—	—	*	2.2	3.8	22.9	29
Sofiya	10.4	10.6	8.6	2.3	0.2	—	—	—	0.2	0.5	6.2	7.3	46.3	10
Chepelare	9.9	9.1	9.3	4.6	0.2	—	—	—	0.2	1.1	6.2	6.7	47.3	16
Varna	6.1	4.9	2.8	0.7	—	—	—	—	—	—	1.4	3.4	19.3	10
Vidin	6.5	3.5	2.6	0.2	—	—	—	—	—	0.2	2.5	4.0	19.5	10
Vrshets	7.0	5.0	3.1	1.0	0.2	—	—	—	—	0.9	3.3	4.9	25.4	15
Obr. Chiflik	7.4	6.3	3.9	0.6	—	—	—	—	—	0.3	2.9	5.0	26.4	
Burgaz	6.3	3.9	2.1	0.6	—	—	—	—	—	—	1.3	2.5	16.7	
Samokov	11.0	10.0	10.0	4.0	—	—	—	—	—	—	6.0	7.0	48.0	10
Rilski Mnastir	10.0	10.0	9.0	4.0	—	—	—	—	—	—	6.0	8.0	47.0	10
Stara-Zagora	6.0	4.0	5.0	—	—	—	—	—	—	—	3.0	3.0	21.0	10
Kazanlk	7.0	7.0	5.0	1.0	—	—	—	—	—	—	4.0	4.0	28.0	10
Khaskovo	7.0	5.0	4.0	1.0	—	—	—	—	—	—	3.0	3.0	23.0	10
MAXIMUM NUMBER OF DAYS WITH SNOWFALL														
Chepelare	18.0	21.0	22.0	7.0	—	—	—	—	—	—	11.0	14.0	93.0	10
Samokov	14.0	19.0	19.0	9.0	—	—	—	—	—	—	12.0	12.0	85.0	10
Rilski Mnastir	14.0	17.0	17.0	8.0	—	—	—	—	—	—	9.0	12.0	77.0	10
Kyustendil	11.0	11.0	12.0	2.0	—	—	—	—	—	—	7.0	7.0	50.0	10
Sofiya	16.0	18.0	21.0	9.0	—	—	—	—	—	—	9.0	17.0	90.0	6
Burgaz	13.0	8.0	11.0	1.0	—	—	—	—	—	—	4.0	6.0	43.0	10
Stara-Zagora	9.0	10.0	8.0	2.0	—	—	—	—	—	—	4.0	7.0	40.0	10
Kazanlk	12.0	14.0	16.0	4.0	—	—	—	—	—	—	7.0	9.0	62.0	10
Khaskovo	12.0	11.0	13.0	3.0	—	—	—	—	—	—	6.0	8.0	53.0	10
Plovdiv	11.0	10.0	10.0	1.0	—	—	—	—	—	—	6.0	6.0	44.0	10

*Less than one day.

TABLE IV - 14
BULGARIA, NUMBER AND MAXIMUM NUMBER OF DAYS WITH SNOW COVER

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
NUMBER OF DAYS WITH SNOW COVERING THE GROUND														
Gabrovo	18.6	14.5	6.7	0.8	*	—	—	—	*	0.2	6.0	13.5	60.3	28
Kyustendil	15.4	8.3	4.1	0.2	—	—	—	—	—	*	3.6	7.6	39.2	27
Pazardzhik	6.5	7.2	2.0	0.2	—	—	—	—	—	—	1.5	4.0	21.4	22
Pleven	16.1	12.6	3.7	0.1	—	—	—	—	—	0.1	2.8	9.5	44.9	28
Shumen	14.3	10.8	3.4	0.2	—	—	—	—	—	0.1	3.3	9.1	41.2	26
Sliven	4.6	2.9	1.0	0.1	—	—	—	—	—	—	0.7	1.8	11.1	29
Chepelare	24.9	18.1	13.8	3.2	0.1	—	—	—	—	0.5	6.5	15.1	82.2	16
Vidin	13.4	10.9	3.2	0.1	—	—	—	—	—	—	3.4	13.6	44.6	10
Samokov	26.0	18.0	16.0	3.0	—	—	—	—	—	—	7.0	13.0	83.0	10
Rilski Mnastir	27.0	16.0	11.0	3.0	—	—	—	—	—	—	6.0	12.0	75.0	10
Stara-Zagora	10.0	5.0	4.0	—	—	—	—	—	—	—	2.0	4.0	25.0	10
Kazanlk	13.0	8.0	2.0	—	—	—	—	—	—	—	2.0	5.0	30.0	10
Khaskovo	18.0	10.0	2.0	—	—	—	—	—	—	—	1.0	4.0	35.0	10
MAXIMUM NUMBER OF DAYS WITH SNOW COVERING THE GROUND														
Chepelare	31.0	28.0	31.0	15.0	—	—	—	—	—	—	13.0	23.0	141.0	10
Samokov	31.0	28.0	31.0	9.0	—	—	—	—	—	—	13.0	27.0	139.0	10
Rilski Mnastir	31.0	28.0	31.0	15.0	—	—	—	—	—	—	19.0	26.0	150.0	10
Kyustendil	31.0	28.0	26.0	3.0	—	—	—	—	—	—	14.0	27.0	129.0	10
Sofiya	31.0	28.0	25.0	3.0	—	—	—	—	—	—	13.0	27.0	127.0	6
Burgaz	25.0	13.0	6.0	—	—	—	—	—	—	—	8.0	8.0	60.0	10
Stara-Zagora	30.0	22.0	4.0	5.0	—	—	—	—	—	—	4.0	11.0	76.0	10
Kazanlk	31.0	28.0	5.0	1.0	—	—	—	—	—	—	7.0	17.0	89.0	10
Khaskovo	31.0	28.0	10.0	1.0	—	—	—	—	—	—	4.0	20.0	94.0	10
Plovdiv	31.0	28.0	8.0	—	—	—	—	—	—	—	5.0	23.0	95.0	10

TABLE IV - 15
BULGARIA, NUMBER OF DAYS WITH THUNDERSTORMS

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
Gabrovo	*	0.1	0.2	2.0	6.1	7.7	6.0	4.1	2.4	0.8	0.3	0.3	29.07	28
Kyustendil	0.1	*	0.1	0.5	2.2	2.4	2.6	1.6	0.8	0.2	0.1	0.1	10.07	27
Pazardzhik	0.1	0.0	0.2	0.8	3.4	4.8	3.5	2.1	1.1	0.3	*	0.1	16.04	24
Plovdiv	0.0	0.2	0.0	1.6	5.3	8.3	3.5	3.6	2.1	0.5	0.0	0.0	25.01	10
Pleven	*	0.0	0.3	1.8	5.4	8.0	6.1	3.4	1.4	0.5	0.1	0.0	27.0	28
Shumen	*	0.0	0.4	1.5	4.9	7.8	5.6	3.6	1.5	0.7	0.3	0.2	26.5	26
Sliven	*	0.2	0.7	2.4	6.7	8.6	6.2	4.0	2.3	1.1	0.4	0.2	32.8	29
Sofiya	0.0	0.2	0.2	2.0	7.7	10.6	7.1	5.3	2.5	1.3	0.3	0.2	37.4	10
Chepelare	0.1	0.1	0.1	1.0	4.4	7.9	6.3	4.1	2.3	0.7	0.4	0.2	27.6	16
Varna	0.0	*	*	1.0	3.0	6.0	4.0	3.0	2.0	1.0	*	*	20.	20
Vidin	0.1	0.0	0.5	1.2	2.8	2.2	2.0	1.7	0.4	0.1	0.0	0.1	11.1	10
Vrshets	0.0	0.1	0.3	0.9	2.1	2.9	2.1	1.3	0.2	0.3	0.3	0.0	10.5	15
Obr. Chiflik	0.1	0.0	0.3	1.2	4.3	6.2	4.4	2.4	1.2	0.4	0.1	0.1	20.7	
Kazanlk	0.1	0.1	1.0	2.7	8.7	11.5	8.6	5.7	3.2	1.4	0.4	0.2	43.6	
Burgaz	0.0	0.2	0.4	1.5	3.7	6.5	3.5	2.4	1.2	0.9	1.5	0.1	20.9	

TABLE IV - 16
BULGARIA, NUMBER OF DAYS WITH HAIL

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
Gabrovo	*	0.1	*	0.9	1.0	1.0	0.5	0.3	0.3	0.0	*	0.0	4.1	28
Kyustendil	0.0	*	0.1	0.4	0.4	0.3	0.4	0.1	0.1	*	0.0	0.0	1.8	27
Pazardzhik	0.0	0.0	*	0.2	0.2	0.2	0.1	0.2	0.0	*	0.0	0.0	0.9	24
Plovdiv	0.0	*	0.0	*	*	1.0	*	*	0.0	0.0	0.0	0.0	1.0	18
Pleven	0.0	0.0	0.1	0.4	0.9	0.4	0.3	0.1	*	0.1	*	*	2.3	28
Shumen	*	*	0.2	0.8	0.9	0.6	0.2	*	*	0.0	0.0	0.0	2.7	26
Sliven	0.0	*	0.3	0.8	1.0	1.0	0.4	0.2	0.2	*	0.1	0.0	4.0	29
Sofiya	0.1	0.1	0.4	0.7	1.9	1.0	0.7	0.3	0.4	0.1	0.0	0.1	5.8	34
Chepelare	0.0	0.0	0.1	0.6	1.4	1.1	0.5	0.1	0.1	0.0	0.0	0.1	4.0	16
Varna	0.0	0.0	0.1	0.3	0.6	0.3	0.0	0.2	0.1	0.0	0.0	0.0	1.6	10
Vidin	0.1	0.1	0.0	0.0	0.1	0.5	0.4	0.2	0.0	0.0	0.0	0.1	1.5	10
Vrshets	0.0	0.1	0.0	0.1	0.4	0.3	0.4	0.1	0.1	0.1	0.1	0.1	1.7	15
Obr. Chiflik	0.0	0.0	0.1	0.3	0.5	0.5	0.1	0.2	0.1	0.0	0.1	0.0	1.9	
Kazanlk	0.0	0.0	0.2	0.6	1.0	0.7	0.3	0.3	0.3	0.1	0.0	0.0	3.5	
Burgaz	0.0	0.1	0.2	0.3	0.5	0.5	0.1	0.1	0.1	0.0	0.0	0.0	1.9	

*Less than one tenth.

TABLE IV - 17
SELECTED STATIONS, WIND DATA

Burgaz (1901–1915)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	6.0	18	8	6	2	3	16	28	13	6
February	6.7	15	13	14	4	2	13	21	11	7
March	4.1	13	18	22	4	3	10	15	10	5
April	5.1	8	16	26	6	3	13	16	8	4
May	3.8	7	15	31	7	3	12	13	5	7
June	4.3	4	8	29	9	6	12	18	4	10
July	4.5	4	6	29	7	5	10	20	7	12
August	4.9	6	12	27	6	5	10	17	8	9
September	5.8	11	13	24	8	6	8	14	7	9
October	4.9	11	13	19	5	4	13	15	11	9
November	5.6	17	8	10	3	4	14	19	12	13
December	6.0	14	6	9	1	4	16	28	14	8
Year	5.2	11	11	21	5	4	13	19	9	7

Chepelare (1899–1916)

Month	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	18	13	1	6	23	10	4	6	19
February	18	13	1	9	23	11	4	4	17
March	18	15	1	8	23	11	3	4	17
April	16	11	2	12	23	10	2	3	21
May	13	12	1	14	25	7	2	3	23
June	15	14	2	14	21	5	2	3	24
July	16	16	2	14	18	4	2	3	25
August	16	14	2	16	18	3	1	3	27
September	17	10	1	14	25	5	2	3	23
October	17	12	1	12	25	8	3	3	19
November	16	14	1	8	23	9	4	5	20
December	17	10	1	6	22	10	2	4	28
Year	16	13	1	11	22	8	3	4	22

Gabrovo (1899–1927)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	2.0	17	6	1	3	13	12	3	17	28
February	2.7	16	6	1	3	14	11	2	18	29
March	3.1	15	5	1	5	18	11	2	17	26
April	3.6	14	5	2	6	20	12	2	14	25
May	1.3	12	5	2	9	17	11	2	12	30
June	1.3	12	4	2	9	15	9	2	16	31
July	2.0	12	4	3	10	16	8	3	16	28
August	1.8	12	4	2	11	17	10	3	16	25
September	1.8	11	4	1	8	16	11	3	15	31
October	1.8	12	5	1	6	15	13	2	13	33
November	1.8	16	5	1	5	13	13	2	15	30
December	1.6	18	6	1	4	13	11	2	15	30
Year	2.2	14	5	2	7	16	11	2	15	28

Kyustendil (1899–1927)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	3.1	4	1	2	1	1	1	1	3	86
February	3.6	5	2	2	1	2	2	2	4	80
March	4.9	4	2	2	2	4	2	3	4	77
April	4.7	4	4	4	2	4	3	4	4	71
May	4.7	4	4	4	2	2	2	5	3	74
June	4.5	5	3	3	2	2	2	5	4	74
July	4.0	5	5	2	1	2	2	4	5	74
August	3.8	4	4	2	1	3	3	4	4	75
September	3.4	3	2	3	2	2	1	3	2	82
October	3.4	2	1	2	2	2	2	2	2	85
November	3.1	3	2	2	2	2	2	2	3	82
December	2.5	4	2	2	2	2	1	1	3	83
Year	3.8	4	3	2	2	2	2	3	3	79

Pazardzhik (1899–1919, 1924–1927)

Month	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	5	2	4	2	1	3	10	16	57
February	5	2	6	3	1	3	9	15	56
March	5	2	10	4	2	4	6	15	52
April	4	3	12	6	1	2	10	13	49
May	4	4	10	5	2	3	9	12	51
June	6	2	6	4	1	3	13	16	49
July	7	2	5	3	1	2	13	17	50
August	6	2	6	3	1	2	12	17	51
September	5	2	7	3	1	2	11	12	57
October	4	3	6	3	1	1	8	12	62
November	3	2	5	2	1	2	10	12	63
December	4	2	6	2	1	2	8	11	64
Year	5	2	7	3	1	2	10	14	56

Pleven (1899–1927)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	2.7	2	6	7	3	2	6	16	11	47
February	3.4	2	6	7	3	2	6	18	10	46
March	4.3	4	8	11	5	2	5	15	11	39
April	3.6	4	7	10	5	3	4	17	11	39
May	3.4	5	8	10	5	3	3	16	11	39
June	3.6	4	5	6	3	2	4	21	15	40
July	3.6	4	5	5	2	2	3	20	16	43
August	3.1	4	6	6	3	2	3	16	13	47
September	3.4	4	7	6	3	1	3	11	13	52
October	2.2	4	6	8	3	2	3	12	10	52
November	2.9	2	6	7	3	2	3	13	11	53
December	2.9	2	5	7	3	2	5	15	10	51
Year	3.2	3	6	8	3	2	4	16	12	46

Plovdiv (1901–1915)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	2.7	3	1	6	5	1	12	25	9	38
February	3.1	4	2	11	8	2	8	19	8	38
March	3.6	3	3	15	10	2	11	17	8	31
April	3.6	2	2	18	11	3	11	16	7	30
May	2.7	3	3	17	10	3	9	15	7	33
June	2.9	3	3	13	7	3	10	21	8	32
July	3.4	4	2	11	5	2	10	22	9	35
August	3.1	3	2	12	8	2	8	19	8	38
September	4.7	2	2	13	10	3	9	18	7	36
October	1.6	2	3	13	9	2	8	14	4	45
November	2.0	1	2	9	7	1	9	20	7	44
December	1.6	2	2	9	5	1	8	19	6	46
Year	3.0	3	2	12	8	2	10	19	7	37

Shumen (1899–1927)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	7.4	8	6	4	3	4	6	29	10	30
February	11.0	9	6	5	7	6	5	24	8	30
March	10.0	9	6	7	9	9	4	19	7	30
April	9.6	6	5	8	10	9	6	22	6	28
May	8.3	6	6	9	9	8	6	18	6	32
June	8.5	5	4	6	6	7	6	25	7	34
July	7.8	4	5	6	4	4	5	27	8	37
August	8.3	6	4	7	6	5	4	22	8	38
September	7.2	7	5	7	5	5	4	18	7	42
October	7.6	5	5	7	5	6	5	19	8	40
November	10.3	8	4	5	5	7	6	22	8	35
December	10.5	7	5	4	5	4	6	26	7	36
Year	8.8	7	5	6	6	6	5	23	7	35

*Miles per hour. #Less than one.

TABLE IV - 17 (*Continued*)
SELECTED STATIONS, WIND DATA

Sliven (1899–1927)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	6.7	8	5	3	5	3	14	10	26	26
February	8.7	8	6	4	7	4	14	9	25	23
March	6.0	8	5	4	9	4	15	8	23	24
April	5.8	7	6	4	11	5	14	10	21	22
May	4.9	7	7	5	11	5	11	9	22	23
June	5.8	8	5	4	7	3	12	13	28	20
July	6.7	10	6	3	6	2	10	13	32	18
August	7.4	9	5	4	7	3	10	13	28	21
September	7.4	9	6	4	7	4	12	12	24	22
October	5.1	8	5	4	6	4	14	9	24	26
November	6.3	9	6	3	5	3	15	9	24	26
December	5.6	8	5	4	5	3	15	9	25	26
Year	6.4	8	6	4	7	4	13	10	25	23

Sofiya (1901–1915)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	5.1	4	3	8	8	2	4	17	15	39
February	6.9	2	6	11	11	2	4	13	14	37
March	6.5	3	8	13	14	3	3	12	13	31
April	6.0	4	8	12	11	2	4	13	14	32
May	6.0	2	6	13	13	1	4	11	13	37
June	5.6	3	6	6	8	1	4	16	16	40
July	5.8	3	5	5	6	2	4	15	17	43
August	5.8	3	6	6	8	2	3	12	14	46
September	5.1	2	5	11	10	2	2	11	12	45
October	4.9	1	4	13	13	1	3	8	8	49
November	4.9	3	4	10	9	2	3	12	12	45
December	4.9	3	2	8	11	2	2	11	12	49
Year	5.6	3	5	10	10	2	3	13	13	41

Varna (1901–1915)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	3.4	16	4	6	3	2	5	24	24	16
February	3.1	15	7	18	6	2	5	15	15	17
March	2.9	11	9	24	9	2	3	12	14	16
April	2.7	11	9	25	11	3	3	12	11	15
May	2.4	6	6	26	14	2	4	12	11	19
June	2.3	8	4	19	11	3	6	15	12	22
July	2.6	9	3	14	14	3	5	16	14	22
August	2.5	9	5	16	14	2	4	17	10	23
September	3.0	13	8	15	12	3	4	14	14	17
October	3.1	15	6	15	10	4	4	17	13	16
November	3.2	16	7	10	8	3	4	16	23	13
December	3.3	14	4	10	6	2	6	18	25	15
Year	2.9	12	6	16	10	3	4	16	15	18

Vidin (1910–1927, nine years broken record)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	4.0	4	8	12	2	2	9	33	11	19
February	4.5	4	8	15	4	3	10	22	11	23
March	5.1	3	7	16	6	3	7	27	11	20
April	5.1	3	7	10	5	5	10	25	10	25
May	3.6	4	6	11	3	4	11	20	8	33
June	3.1	3	5	4	3	3	10	26	11	35
July	4.3	2	3	3	2	4	10	24	10	42
August	3.4	2	4	3	1	4	12	26	12	36
September	3.4	3	5	6	2	4	13	19	11	37
October	2.7	3	6	8	4	4	6	18	11	40
November	3.6	3	8	13	3	3	6	23	6	35
December	4.3	1	6	15	5	4	7	22	6	34
Year	3.7	3	6	10	3	4	9	24	10	31

Vrshets (1914–1926)

Month	Mean Vel.*	Percentage of Observations From: N	NE	E	SE	S	SW	W	NW	Calm
January	1.1	2	1	#	2	4	6	1	3	81
February	1.6	3	1	1	1	4	5	1	2	82
March	2.9	3	2	1	1	9	7	1	1	75
April	2.9	3	2	2	3	7	3	2	1	77
May	1.8	2	1	3	2	3	1	1	1	86
June	1.3	3	3	3	2	6	3	2	1	77
July	1.6	4	2	3	3	3	3	1	2	79
August	1.6	1	1	2	1	4	2	2	2	85
September	1.1	2	1	4	1	6	3	2	2	79
October	2.0	1	#	2	1	6	3	2	1	84
November	2.2	2	1	#	1	7	6	1	2	80
December	2.7	2	#	#	1	4	4	1	1	87
Year	1.9	2	1	2	2	5	4	1	2	81

TABLE IV - 18
BULGARIA, CLOUDINESS (TENTHS)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual	Years of Record
Gabrovo	6.4	6.7	6.3	5.9	5.8	5.3	4.2	3.5	4.1	5.4	6.5	6.8	5.6	28
Kyustendil	5.7	5.8	5.4	5.4	5.1	4.6	3.3	2.9	3.6	4.7	5.9	6.7	4.9	27
Pazardzhik	5.5	6.0	5.7	5.3	5.1	4.3	3.2	2.7	3.5	4.9	6.0	6.4	4.9	24
Plovdiv	6.0	6.8	6.4	5.8	5.6	5.1	3.9	3.3	4.2	5.3	6.5	6.9	5.5	18
Pleven	6.5	6.7	6.0	5.2	5.2	4.7	3.6	2.9	3.7	5.3	6.7	7.3	5.3	28
Shumen	6.9	7.2	6.7	6.0	5.9	5.4	4.0	3.4	4.0	5.8	6.9	7.4	5.8	26
Sliven	6.6	7.0	6.5	6.2	6.1	5.5	4.0	3.3	3.8	5.5	6.5	7.1	5.7	29
Sofiya	6.5	6.5	6.1	6.0	5.5	4.9	3.7	3.1	4.0	5.0	6.6	7.0	5.4	18
Chepelare	5.4	5.7	6.0	5.9	5.1	5.1	3.7	3.2	3.9	5.0	5.9	5.8	5.1	16
Varna	6.3	6.8	6.8	5.8	5.4	4.6	3.2	2.7	4.0	5.4	6.6	6.9	5.4	18

*Miles per hour. #Less than one.

TABLE IV - 18 (*Continued*)

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
Vidin	6.7	6.9	6.5	6.1	6.0	5.1	4.0	3.5	4.4	5.9	7.0	7.9	5.8	10
Vrshets	6.8	6.9	6.1	5.8	5.7	4.7	3.8	3.3	4.1	6.1	7.3	7.3	5.7	15
Obr. Chiflik	6.5	6.5	6.0	5.4	5.3	4.8	3.8	3.1	3.6	5.3	6.7	7.2	5.4	
Petrokhan	5.9	7.0	6.8	6.4	6.0	5.8	4.4	3.5	4.8	6.1	6.9	7.2	5.9	
Kazanlk	6.1	6.5	6.3	5.9	5.7	5.2	3.8	3.2	3.9	5.4	6.3	6.6	5.4	
Burgaz	6.3	6.8	6.8	6.0	5.4	4.7	3.2	2.7	3.8	5.4	6.8	7.0	5.4	
Petrich	5.6	5.6	5.4	4.5	4.7	4.1	2.7	2.4	2.4	4.4	5.7	6.4	4.5	

TABLE IV - 19

BULGARIA, NUMBER OF CLEAR, PARTLY CLOUDY AND CLOUDY DAYS

STATION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	YEARS OF RECORD
NUMBER OF CLEAR DAYS														
Gabrovo	5.2	3.4	4.7	4.1	3.9	4.6	8.7	12.3	10.5	7.8	4.3	3.8	73.3	28
Kyustendil	6.3	5.9	6.6	5.9	6.4	6.8	13.2	14.8	12.6	9.4	5.8	3.7	97.4	27
Pazardzhik	7.5	6.0	6.2	5.8	5.9	7.6	12.4	15.2	12.6	9.3	5.7	5.8	100.0	24
Plovdiv	6.0	4.0	5.0	5.0	4.0	5.0	10.0	14.0	12.0	8.0	4.0	4.0	81.0	21
Pleven	4.6	3.8	5.6	5.3	5.3	6.5	10.7	14.2	11.8	7.7	4.1	3.0	82.6	28
Shumen	3.4	2.0	3.8	3.9	4.1	5.0	9.4	12.0	10.6	6.4	3.3	2.5	66.4	26
Sliven	4.1	2.9	3.4	3.0	2.6	3.9	9.0	11.6	11.0	6.6	4.1	2.9	65.1	29
Sofiya	5.0	4.0	5.0	5.0	6.0	6.0	11.0	15.0	13.0	9.0	4.0	3.0	86.0	21
Chepelare	8.1	5.6	4.9	4.5	5.2	4.7	10.2	13.2	10.5	8.5	6.2	6.8	88.4	16
Varna	5.0	4.0	4.0	5.0	6.0	8.0	13.0	15.0	11.0	6.0	4.0	4.0	85.0	20
Vidin	3.1	2.6	3.1	4.0	3.0	5.1	7.5	11.0	9.2	5.9	2.9	2.1	59.5	10
Vrshets	4.3	4.1	6.1	4.7	4.5	6.4	10.2	13.5	11.9	7.5	3.1	3.7	80.0	15
NUMBER OF PARTLY CLOUDY DAYS														
Gabrovo	12.8	12.6	14.2	17.2	19.0	18.8	18.6	15.5	14.2	13.3	13.0	12.3	181.5	28
Kyustendil	13.7	12.1	15.3	15.7	18.1	18.4	15.7	13.7	12.8	13.1	13.1	12.8	174.5	27
Pazardzhik	12.9	11.8	14.8	16.6	18.6	19.5	16.7	13.8	13.7	12.8	12.6	11.4	175.2	24
Plovdiv	13.0	11.0	14.0	16.0	20.0	20.0	18.0	14.0	13.0	13.0	13.0	12.0	177.0	21
Pleven	12.7	11.4	14.2	18.3	19.5	18.9	17.8	14.8	14.1	13.8	11.7	11.4	178.6	28
Shumen	13.2	12.6	14.0	16.9	18.5	18.7	18.7	16.7	15.2	13.3	12.7	12.0	182.5	26
Sliven	13.2	12.2	15.2	17.3	19.7	20.3	18.6	17.2	15.3	15.1	13.3	12.8	190.2	29
Sofiya	12.0	12.0	15.0	16.0	17.0	19.0	17.0	13.0	12.0	12.0	13.0	13.0	171.0	21
Chepelare	12.0	12.9	14.7	16.2	19.6	20.3	18.2	14.9	14.6	14.3	12.7	13.5	183.9	16
Varna	14.0	12.0	14.0	16.0	18.0	18.0	16.0	14.0	15.0	17.0	12.0	12.0	178.0	20
Vidin	14.4	11.8	15.7	16.6	19.5	19.1	20.7	17.8	15.0	13.7	13.5	9.5	187.3	10
Vrshets	11.4	9.3	13.0	16.5	17.2	18.2	17.4	14.5	11.9	9.6	10.8	10.4	160.2	15
NUMBER OF CLOUDY DAYS														
Gabrovo	13.0	12.0	12.1	8.7	8.1	6.6	3.7	3.2	5.3	9.9	12.7	14.9	110.2	28
Kyustendil	11.0	10.0	9.1	8.4	6.5	4.8	2.1	2.5	4.6	8.5	11.1	14.5	93.1	27
Pazardzhik	10.6	10.2	10.0	7.6	6.5	2.9	1.9	2.0	3.7	8.9	11.7	13.8	89.8	24
Plovdiv	12.0	13.0	12.0	9.0	7.0	5.0	3.0	3.0	5.0	10.0	13.0	15.0	107.0	21
Pleven	13.7	12.8	11.2	6.4	6.2	4.6	2.5	2.0	4.1	9.5	14.2	16.6	103.8	28
Shumen	14.4	13.4	13.2	9.2	8.4	6.3	2.9	2.3	4.2	11.3	14.0	16.5	116.1	26
Sliven	13.7	12.9	12.4	9.7	8.7	5.8	3.4	2.2	3.7	9.3	12.6	15.3	109.7	29
Sofiya	14.0	12.0	11.0	9.0	8.0	5.0	3.0	3.0	5.0	10.0	13.0	15.0	108.0	21
Chepelare	10.9	9.5	11.4	9.3	6.2	5.0	2.6	2.9	4.9	8.2	11.1	10.7	92.7	16
Varna	12.0	12.0	13.0	9.0	7.0	4.0	2.0	2.0	4.0	8.0	14.0	15.0	102.0	20
Vidin	13.5	13.6	12.2	9.4	8.5	5.8	2.8	2.2	5.8	11.4	13.6	19.4	118.2	10
Vrshets	15.3	19.6	11.9	8.8	9.3	5.4	3.4	3.0	6.2	13.9	16.1	16.9	124.8	15

TABLE IV - 20

SELECTED STATIONS, NUMBER OF OBSERVATIONS WITH CEILINGS OF 1,000 FEET OR LESS

Bucureşti, Rumania. LAT. 44° 25′ N.; LONG. 26° 06′ E. ELEV. 273 ft.

MONTH	JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE		
Hour	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900
Mean	10.5	11.3	8.3	6.5	5.0	3.7	5.1	3.9	1.8	2.3	1.0	0.4	1.1	0.7	0.9	0.8	0.8	0.3
Greatest	20	17	12	13	11	11	11	12	4	9	3	2	4	1	4	3	2	2
Least	1	6	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0

MONTH	JULY			AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER		
Hour	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	08000	1400	1900
Mean	0.2	0	0.2	1.0	0	0.3	0.7	0.3	0	3.0	1.5	1.9	7.2	7.5	4.4	10.2	7.1	5.7
Greatest	1	0	2	4	0	2	2	1	0	6	4	4	13	11	10	19	15	12
Least	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0

TABLE IV - 20 (*Continued*)

Musala, Bulgaria. LAT. 42° 10′ N.; LONG. 23° 38′ E. ELEV. 9,596 ft.

Month	January		February		March		April		May		June	
Hour	0800	1400	0800	1400	0800	1400	0800	1400	0800	1400	0800	1400
Mean	8.5	10.7	7.4	8.6	8.6	12.0	8.3	13.7	5.4	7.6	4.8	11.6
Greatest	11	13	11	12	19	16	12	17	7	9	11	18
Least	5	4	3	5	3	5	4	0	3	5	0	6

Month	July		August		September		October		November		December	
Hour	0800	1400	0800	1400	0800	1400	0800	1400	0800	1400	0800	1400
Mean	4.1	4.1	5.2	7.0	6.1	8.8	9.0	9.8	6.2	7.5	10.2	8.8
Greatest	10	11	8	13	9	14	10	15	9	13	14	16
Least	0	1	3	5	4	3	7	6	3	3	2	3

Sofiya, Bulgaria. LAT. 42° 42′ N.; LONG. 23° 20′ E. ELEV. 1,804 ft.

Month	January			February			March			April			May			June		
Hour	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900
Mean	5.8	3.0	4.0	2.3	0.9	2.5	2.0	1.4	1.4	0.6	0	0.6	0.2	0.4	0.3	0	0	0.2
Greatest	15	5	17	4	3	14	6	4	8	1	0	4	1	1	1	0	0	1
Least	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Month	July			August			September			October			November			December		
Hour	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900
Mean	0	0.3	0	0	0.4	0.3	0	0	0	2.1	0.9	0.5	3.5	1.7	1.3	2.3	1.2	1.0
Greatest	0	1	0	0	1	5	0	0	0	3	2	1	9	8	4	4	5	3
Least	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0

TABLE IV - 21

BULGARIA, NUMBER OF DAYS WITH FOG

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual	Years of Record
Gabrovo	3.7	3.9	3.0	1.0	0.8	0.5	0.5	0.4	1.2	3.3	5.4	6.8	30.5	27
Kyustendil	4.2	1.0	0.7	0.2	*	*	0.0	0.0	0.1	0.6	3.6	5.1	15.5	27
Pazardzhik	3.0	3.1	1.2	0.5	0.4	0.2	0.0	0.0	0.2	1.0	3.7	5.3	18.6	24
Plovdiv	5	4	2	*	*	*	0	*	1	2	4	6	24	18
Pleven	7.1	5.9	3.1	1.2	0.5	0.2	0.1	0.3	1.4	4.5	6.7	8.9	39.9	28
Shumen	5.3	5.2	6.1	2.4	1.9	1.5	0.7	1.0	2.8	6.2	7.7	8.7	49.5	25
Sliven	2.2	2.3	1.9	1.2	0.7	0.1	0.0	0.0	0.1	0.9	2.2	3.7	15.3	29
Sofiya	12	7	6	1	*	*	*	*	1	6	10	12	55	18
Chepelare	1.1	1.3	1.0	0.4	0.1	0.2	0.1	0.2	0.4	1.3	1.4	2.2	9.7	16
Varna	3	4	4	2	1	*	*	1	2	3	3	4	27	18
Viden	4.4	8.1	1.6	0.4	0.2	0.3	0.3	0.4	1.0	5.8	6.0	8.4	36.9	10
Vrshets	5.8	4.7	3.1	1.4	0.9	0.3	0.0	0.2	1.4	5.3	6.4	7.3	36.8	15

TABLE IV - 22

SELECTED STATIONS, NUMBER OF OBSERVATIONS WITH VISIBILITIES OF 2½ MILES OR LESS

Bucureşti, Rumania. LAT. 44° 25′ N.; LONG. 26° 06′ E. ELEV. 273 ft.

Month	January			February			March			April			May			June		
Hour	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900
Mean	22.4	14.6	23.9	18.0	7.2	14.0	12.2	1.9	10.2	4.2	1.2	4.1	2.8	1.1	3.9	2.0	0.8	2.1
Greatest	31	25	29	25	13	27	28	6	31	9	5	24	13	2	15	7	2	6
Least	13	9	11	12	3	1	2	0	1	0	0	0	0	0	0	0	0	0

Month	July			August			September			October			November			December		
Hour	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900
Mean	1.8	0	3.9	2.2	0.6	9.9	3.7	0.6	7.7	9.7	2.1	9.9	17.2	8.1	14.7	20.3	9.7	17.0
Greatest	5	0	13	11	2	19	15	3	22	21	3	27	25	14	30	31	23	31
Least	0	0	0	0	0	0	0	0	0	3	0	3	10	0	4	13	3	10

Musala, Bulgaria. LAT. 42° 10′ N.; LONG. 23° 38′ E. ELEV. 9,596 ft.

Month	January		February		March		April		May		June	
Hour	0800	1400	0800	1400	0800	1400	0800	1400	0800	1400	0800	1400
Mean	9.0	10.2	8.3	8.6	8.1	9.1	8.1	9.9	4.5	6.8	5.1	6.4
Greatest	14	13	11	12	12	11	13	12	9	9	11	10
Least	5	4	5	5	5	5	6	8	2	4	0	2

Month	July		August		September		October		November		December	
Hour	0800	1400	0800	1400	0800	1400	0800	1400	0800	1400	0800	1400
Mean	4.8	5.6	4.4	3.5	4.8	4.7	7.2	6.7	5.3	4.7	8.7	8.1
Greatest	6	8	6	5	6	10	8	7	6	7	11	16
Least	2	4	3	3	4	1	5	5	4	3	3	2

*Less than one day.

TABLE IV - 22 (*Continued*)

Sofiya, Bulgaria. LAT. 42° 42′ N.; LONG. 23° 20′ E. ELEV. 1,804 ft.

Month	January			February			March			April			May			June		
Hour	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900
Mean	10.2	5.1	11.4	3.4	1.8	6.0	3.0	1.9	3.9	0.6	0.6	2.4	0.2	1.5	0.4	0.4	0.6	1.0
Greatest	17	9	31	6	4	28	6	3	5	2	1	30	1	3	5	1	2	2
Least	6	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0

Month	July			August			September			October			November			December		
Hour	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900	0800	1400	1900
Mean	1.3	1.2	1.8	0.3	0.8	0.9	0	0.8	3.7	2.4	0.6	0.5	5.4	1.5	6.8	5.4	4.6	9.4
Greatest	7	2	3	1	1	13	0	2	2.8	5	2	2	8	4	30	14	8	30
Least	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2	1	2

TABLE IV - 23

BULGARIA, LIST OF METEOROLOGICAL STATIONS WITH TYPES OF OBSERVATIONS TAKEN

1. Pressure
2. Temperature
3. Relative humidity
4. Cloudiness (tenths)
5. Wind velocity
6. Direction of wind
7. Precipitation
8. Number of days with rain
9. Number of days with snow
10. Number of days with thunderstorms
11. Number of days with hail
12. Number of days with fog
13. Number of days with gales
14. Insolation

Station	Lat. N. °	′	Long. E. °	′	Elev. m.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Aitos	42	42	27	16	100		*	*	*	*	*	*	*	*		*			
Pomoriye (Anhialo)	42	33	27	39	3		*		*			*	*	*		*			
Kubrat (Balbounar)	43	48	26	28	235							*	*	*		*			
Banya (Bania)	42	36	25	59	220							*	*	*		*			
Bankya (Bankia)	42	42	23	09	636		*	*	*	*	*	*	*	*	*	*	*	*	
Batak	41	57	24	13	970							*	*	*		*			
Bela-Slatina (Bela-slatina)	43	28	23	57	130							*	*	*		*			
Belogradchik (Belogradtchik)	43	37	22	41	545							*	*	*		*			
Berkovitsa (Berkovitza)	43	14	23	08	405							*	*	*		*			
Bela (Biala)	43	28	25	44	35							*	*	*		*			
Bela-cherkva (Biala-tcherkva)	43	12	25	19	110							*	*	*		*			
Boeritza (see Vitosha)																			
Bozhurishte (Bojourichte) I	42	46	23	12	560		*					*	*	*		*			
Bozhurishte (Bojourichte) II	42	46	23	12	555	*	*	*	*	*	*	*	*	*	*	*	*	*	
Borouch	43	14	25	39	75							*	*	*		*			
Burgaz (Burgas)	42	29	27	29	5	*	*	*	*	*	*	*	*	*	*	*	*	*	
Buchin-prokhod (Boutchino)	42	58	23	09	768							*	*	*		*			
Breznik	42	44	22	55	750		*		*			*	*	*		*			
Brezovo	42	21	25	05	235							*	*	*		*			
Shipka (Chipka)	42	43	25	20	570							*	*	*		*			
Shumen (Choumen)	43	16	26	56	228		*	*	*	*	*	*	*	*	*	*	*	*	
Zlatograd (Dara-Dere)	41	22	25	07	600							*	*	*		*			
Devin (Dieuvlen)	41	45	24	24	710							*	*	*		*			
Divlya (Divlia)	42	35	22	42	320							*	*	*		*			
Dolni Debnik	43	25	24	27	105		*	*	*	*	*	*	*	*		*			
Dupnitsa (Doupnitza)	42	16	23	07	520		*		*			*	*	*		*			
Dragoevo	43	08	26	53	200							*	*	*		*			
Drenovo (Drianovo)	42	59	25	29	255							*	*	*		*			
Ardino (Egri-Dere)	41	36	25	46	700							*	*	*		*			
Elena	42	56	25	53	275							*	*	*		*			
Elkhovo (Elhovo)	42	11	26	34	130							*	*	*		*			
Trgovishte (Eski-djoumaia)	43	15	26	34	180							*	*	*		*			
Etropole	42	50	24	00	545							*	*	*		*			
Ferdinand	43	24	23	13	160							*	*	*		*			
Gabare	43	18	23	55	203		*	*	*	*	*	*	*	*		*			
Gabrovo	42	52	25	19	375	*	*	*	*		*	*	*	*	*	*	*	*	
Golemo Konare	42	16	24	33	200							*	*	*		*			
Gorni Chiflik (Goren-tchiflik)	43	00	27	36			*	*	*	*	*	*	*	*		*			
Gorna Dzhumaya (Gorna-djoumaia)	42	01	23	06	440							*	*	*		*			
Gorni Lozen	42	37	23	30			*	*	*	*	*	*	*	*		*		*	
Gorna Orekhovitsa (Gor.-orehovitza) I	43	07	25	41	95	*	*	*	*	*	*	*	*	*	*	*	*	*	
Gorna Orekhovitsa (Gor.-orehovitza) II	43	07	25	42	160		*		*			*	*	*		*			
Gradets (Gradetz)	42	48	26	32	405							*	*	*		*			
Gramada	43	51	22	39								*	*	*		*			
Khaskovo (Haskovo)	41	55	23	13			*	*	*	*	*	*	*	*		*			
Khisar (Hissar)	42	30	24	42	275							*	*	*		*			
Yablanitsa (Iablanitza)	43	02	23	59	400							*							
Yakoruda (Iakorouda)	42	01	21	19	950														
Ikhtiman (Ihtiman)	42	26	23	49	630		*	*	*	*	*	*	*	*		*			
Iskrets (Iskretz) sanatorium							*	*	*	*	*	*	*	*		*			
Vrbak (Kabiuk)	43	24	26	56	298							*	*	*		*			
Konevets (Kaia-Bouroun)	42	16	26	34	130							*	*	*		*			
Kalofer	42	37	24	58	625							*	*	*		*			
Sredets (Kara-bounar)	42	20	27	13	23							*	*	*		*			
Vinitsa (Kara-demir)	43	06	26	47	150							*	*	*		*			

TABLE IV - 23 (*Continued*)

1. Pressure
2. Temperature
3. Relative humidity
4. Cloudiness (tenths)
5. Wind velocity
6. Direction of wind
7. Precipitation
8. Number of days with rain
9. Number of days with snow
10. Number of days with thunderstorms
11. Number of days with hail
12. Number of days with fog
13. Number of days with gales
14. Insolation

STATION	LAT. N. ° ′	LONG. E. ° ′	ELEV. M.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Kara-Isen (Karaisen)	43 23	25 21	120							*	*	*		*			
Karamanovo	43 06	25 32	105							*	*	*		*			
Karlovo	42 39	24 49	445		*		*			*	*	*		*			
Karnobat	42 39	26 59	215		*	*	*	*	*	*	*	*		*			*
Topolovgrad (Kavakly)	42 05	26 20	285							*	*	*		*			
Kazanlk (Kazanlyk) I	42 37	25 24	372	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Kazanlk (Kazanlyk) II	42 37	25 24	380		*	*	*	*	*	*	*	*	*	*	*	*	
Isperikh (Kemanlar)	43 43	26 49	275							*	*	*		*			
Kermen (Kermenly)	42 30	26 18	62							*	*	*		*			
Kesarevo (Kessarevo)	43 09	26 03	105							*	*	*		*			
Krdzhali (Kirdjaly)	41 39	25 22	270		*	*	*	*	*	*	*	*		*			*
Knezha (Kneja)	43 30	24 05	120		*	*	*	*	*	*	*	*	*	*	*	*	
Koprivshtitsa (Koprivchtitza)	42 38	24 21	945							*	*	*		*			
Kostinbrod	42 48	23 13	555							*	*	*		*			
Kocherinovo (Kotcherinovo)	42 05	23 04	405							*	*	*		*			
Kotel	42 53	26 27	515							*	*	*		*			
Krumovgrad	41 28	25 34	350							*	*	*		*			
Kula (Koula)	43 54	22 32	295							*	*	*		*			
Kravino	42 13	25 45	149							*	*	*		*			
Kyustendil (Kustendil)	42 17	22 41	525	*	*	*	*	*	*	*	*	*	*	*	*	*	
Ladzhene (Lajene)	42 02	24 00	745		*	*	*	*	*	*	*	*		*			
Lesichovo (Lessitchevo)	42 21	24 07	228							*	*	*		*			
Levski	43 21	25 09	66							*	*	*		*			
Lom	43 57	23 14	45		*	*	*	*	*	*	*	*		*			*
Lukovit (Loukovit)	43 12	24 10	130							*	*	*		*			
Lovech (Lovetch)	43 08	24 43	210							*	*	*		*			
Lyubimets (Lubimetz)	41 51	26 05	55							*	*	*		*			
Malko Trnovo	41 59	27 32	340							*	*	*		*			
Momchilgrad (Mastanly)	41 32	25 23	300							*	*	*		*			
Nesebr (Messemvria)	42 39	27 44	10							*	*	*		*			
Mezdra	43 08	23 43	224														
Boichinovtsi (Minkovamahla)	43 29	23 20	130		*		*			*	*	*		*			
Mirkovo	42 42	24 00	620							*	*	*		*			
Musala (Mussala, Cabane de)					*	*	*	*	*	*	*	*		*			
Nadarevo	43 15	26 47	100							*	*	*		*			
Nevrokop	41 35	23 45			*	*	*	*	*	*	*	*		*			
Nikopol	43 42	23 54	41							*	*	*		*			
Nova Zagora	42 30	26 01	130							*	*	*		*			
Novi Pazar (Novi-pazar)	43 21	27 12	105							*	*	*		*			
Novo-Selo (Novo-selo)	43 03	27 21	25							*	*	*		*			
Novoseltsi (Novoseltzi)	42 40	23 36	555							*	*	*		*			
Obraztsov Chiflik (Obr.-tchiflik)	43 48	26 02	153	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Botevgrad (Orhanie)	42 54	23 48	350		*		*			*	*	*		*			
Ivailovgrad (Ortakeuy)	41 26	26 08	200							*	*	*		*			
Omortag (Osman-Pazar)	43 06	26 25	530							*	*	*		*			
Bolyarovo (Pachakeuy)	42 09	26 49	210							*	*	*		*			
Smolyan (Pachmakly)	41 33	24 42	1010							*	*	*		*			
Panagyurishte (Panaghurichte)	42 30	24 11	525		*		*			*	*	*		*			
Popovitsa (Papazly)	42 08	25 04	140							*	*	*		*			
Pavlikeni	43 14	25 18	155		*	*	*	*	*	*	*	*		*			*
Pazardzhik (Pazardjik)					*	*	*	*	*	*	*	*		*			
Peshtera (Pechtera)	42 02	24 18	425		*		*			*	*	*		*			
Peinirdzhik (Peinerdjik)	43 11	27 53	5	*	*	*	*	*	*	*	*	*	*	*	*	*	
Pernik	42 36	23 02	700							*	*	*		*			
Perushtitsa (Perouchtitza)	42 03	24 33	255							*	*	*		*			
Petrich (Petritch)	41 22	22 42	150		*		*			*	*	*		*			
Petrokhan (Petrohan)	43 07	23 07	1400							*	*	*		*			
Pirdop	42 42	24 11	705		*		*			*	*	*		*			
Pleven I	43 31	24 32	32	*	*	*	*			*	*	*		*			
Pleven II	43 24	24 37	125	*	*	*	*	*	*	*	*	*	*	*	*	*	
Plovdiv	42 09	24 45	160	*	*	*	*	*	*	*	*	*	*	*	*	*	
Popovo	43 21	26 14	200							*	*	*		*			
Preslav	43 10	26 49	120							*	*	*		*			
Provadiya (Provadia)	43 11	27 27	35							*	*	*		*			
P. Trambesh (P.-Trambech)	43 22	25 40	40							*	*	*		*			
Radnevo	42 18	25 56	160							*	*	*		*			
Radomir	42 33	22 58	705		*	*	*	*	*	*	*	*		*			
Bozhidar (Rahmanlare)	42 43	24 33	535							*	*	*		*			
Rozovets (Rahmanly)	42 28	25 07	430							*	*	*		*			
Orekhovo (Rahovo)	43 44	23 58	94		*	*	*	*	*	*	*	*		*			

TABLE IV - 23 (*Continued*)

1. Pressure
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6. Direction of wind
7. Precipitation
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9. Number of days with snow
10. Number of days with thunderstorms
11. Number of days with hail
12. Number of days with fog
13. Number of days with gales
14. Insolation

Station	Lat. N. ° ′	Long. E. ° ′	Elev. m.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Razgrad	43 31	26 14	205		*		*			*	*	*		*			
Razlog (Mekhomiya)	41 53	21 10	780							*	*	*		*			
Rila	42 06	23 07	520		*	*	*	*	*	*	*	*	*	*	*	*	*
Rilski Mnastir	42 08	23 21	1175		*		*			*	*	*		*			
Ruse (Rousse) (See Obraztsor Chiflik)																	
Sadovo	42 09	24 57	150	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Samokov	42 20	23 34	950	*	*	*	*	*	*	*	*	*	*	*	*	*	
Blatnitsa (Saru-gjol)	42 13	24 08	1960							*	*	*		*			
Sevlievo	43 02	25 07	200							*	*	*		*			
Sitnyakovo (Sitniakovo)	42 14	23 37	1740		*	*	*	*	*	*	*	*	*	*	*	*	
Sliven	42 41	26 19	276	*	*	*	*	*	*	*	*	*	*	*	*	*	
Smedovo	43 04	27 02	85							*	*	*		*			
Sofiya (Sofia) I	42 42	23 20	550	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Sofiya (Sofia) II	42 41	23 20	560							*	*	*		*			
V. Musala (Sommet Moussala)										*	*	*		*			
Sukhindol (Souhindol)	43 11	25 10	245		*	*	*	*	*	*	*	*		*			
Stara-Zagora	42 25	25 38	234		*	*	*	*	*	*	*	*		*			
Starosel	42 29	24 34	340							*	*	*		*			
Stizharov (Stijarov)	43 30	25 09	150							*	*	*		*			
Strelcha (Streltcha)	42 30	24 19	480							*	*	*		*			
Sveti Vrach (Sveti-Vratch)					*	*	*	*	*	*	*	*		*			
Svishtov (Svichtov)	43 37	25 21	72							*	*	*		*			
General Toshevo (Talachmanly)	42 13	26 18	240							*	*	*		*			
Cham-koriya (Tcham-koria)					*	*	*	*	*	*	*	*		*			
Chiporovtsi (Tchiporovtzi)	43 23	22 53	510							*	*	*		*			
Chirpan (Tchirpan)	42 12	25 20	170		*	*	*	*	*	*	*	*		*			*
Teteven	42 55	24 16	415							*	*	*		*			
Trnovo (Tirnovo)	43 05	25 39	208		*		*			*	*	*		*			
Simeonovgrad (Tirnovo-Seimen)	42 01	25 51	90							*	*	*		*			
Ticha (Titcha)	42 58	26 27	360							*	*	*		*			
Topolovo	41 54	25 00	405							*	*	*		*			
T.-Pazardzhik (Pazardjik)	42 11	24 20	205		*	*	*		*	*	*	*	*	*	*	*	
Trevna	42 52	25 30	435							*	*	*		*			
Trn (Trin)	42 50	22 39	650		*	*	*	*	*	*	*	*		*			
Troyan (Troian)	42 53	24 43	420							*	*	*		*			
Vlchedrma (Valtchedirma)	43 41	23 27	85							*	*	*		*			
Vrbitsa (Varbitza)	43 00	26 41	213							*	*	*		*			
Vardun (Vardoun)	43 08	26 33	320							*	*	*		*			
Varna	43 13	27 55	60	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Tsarevo (Vassiliko)	42 10	27 52	10							*	*	*		*			
Vidin	44 00	22 51	35		*	*	*	*	*	*	*	*	*	*	*	*	
Vitosha (Vitocha)	42 37	23 15	1735		*	*	*	*	*	*	*	*	*	*	*	*	
Vrana			570		*	*	*	*	*	*	*	*		*			
Vrattsa (Vratza) I	43 12	23 33	380							*	*	*		*			
Vrattsa (Vratza) II	43 14	23 32	331		*	*	*	*	*	*	*	*		*			
Vrshets (Vrchetz)	43 08	23 18	380		*	*	*	*	*	*	*	*	*	*	*	*	
Yablanitsa (Yablanitza)	43 02	24 06	400							*	*	*		*			
Yakoruda (Yakorouda)			950							*	*	*		*			
Yambol	42 29	26 31	135	*	*	*	*	*	*	*	*	*	*	*	*	*	